DVV Clarifications
Metrics Level Deviations

<table>
<tr>
<td>3.7.1</td>
<td>Number of Collaborative activities per year for research/ faculty exchange/ student exchange/ internship/ on –the-job training/ project work

3.7.1.1. Total number of Collaborative activities per year for research/ faculty exchange/ student exchange/ internship/ on –the-job training/ project work

HEI Input :
<table>
<tr><td>2020-21</td><td>2019-20</td><td>2018-19</td><td>2017-18</td><td>2016-17</td></tr>
<tr><td>19</td><td>16</td><td>17</td><td>9</td><td>10</td></tr>
</table>
</td>
<td>Provide Copies of collaboration/related documents of (institution's name) indicating the nature of collaboration and activities for the year 2016-17, 2017-18 , 2018-19 and 2019-20, 2020-21.</td>
</tr>
</table>

Supporting Documents:

1. **Copies of collaboration/related documents indicating the nature of collaboration**
2. **Collaborative activities for the year 2016-17, 2017-18 , 2018-19 and 2019-20, 2020-21.**

MEMORANDUM OF UNDERSTANDING (MOU)

BETWEEN

HERITAGE INSTITUTE OF TECHNOLOGY
KOLKATA

AND

STAR CEMENT LIMITED
KOLKATA

This **Memorandum of Understanding** (hereinafter called as the '**MOU**') is entered into on this Wednesday 7th day of October Two Thousand Twenty (2020)

BETWEEN

Heritage Institute of Technology, 994, Madurdaha, Chowbaga Road Anandapur, P.O.-East Kolkata Township, Kolkata-700107, West Bengal, the First Party represented herein by its **Principal, Prof. (Dr.) Pranay Chaudhuri**(hereinafter referred as **'First Party'**, the institution which expression, unless excluded by or repugnant to the subject or context shall include its successors – in-office, administrators and assigns).

AND

Star Cement Limited, having its registered office at Lumshnong, P.O.: Khaliehriat, Dist. East Jaintia Hills , Meghalaya , 793210, the Second Party, and represented herein by its **Chief Executive Officer, Mr. Sanjay Gupta**, (hereinafter referred to as "**Second Party**", company which expression, unless excluded by or repugnant to the subject or context shall include its successors – in-office, administrators and assigns).

(First Party and Second Party are hereinafter jointly referred to as 'Parties' and individually as 'Party')

for

Establishment of a Biomedical Research Centre under the name and style **"Swami Vivekananda Center for Advanced Biomedical Research"** at the Heritage Institute of Technology, Kolkata

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS **MOU**, THE PARTIES HERETO AGREE AS FOLLOWS:

1.0 INTRODUCTION

Heritage Institute of Technology, Kolkata, (referred to as **HIT-K** henceforth) and Star Cement Limited (referred to **SCL** henceforth) are linked by common interests and seek to develop collaborations and exchanges in

fields of some shared interest in the field of BiomedicalResearch particularly Genomic Research. The activities undertaken pursuant to this Memorandum of Understanding **(MOU)** are based on a spirit of cooperation and reciprocity that is intended to be of mutual benefit to both parties.

To the extent that the implementation of any agreed upon activity requires a commitment of resources, personnel, or intellectual property, a supplementary agreement must be negotiated and approved by the two parties before work on any of the projects can commence.

2.0 PURPOSE

2.1 This Memorandum of Understanding **(MOU)** serves as a written understanding of agreed upon principles between**Heritage Institute of Technology, Kolkata** and **Star Cement Limited**concerning a set of general objectives on commencement of research unit at **HIT-K** initially for Genomic Research. This is a nonbinding agreement and is intended to clarify and to formalize the nature and extent of the complementary activities between key service delivery partners, defines roles and responsibilities and fosters a strong partnership that might be undertaken for the mutual benefit of the two parties.

2.2 Commitments of specific institutional resources, personnel, space, facilities, or any other academic or intellectual activities may be contemplated hereunder but are beyond the scope of this **MOU**.

2.3 Due to some unique abnormal genetic pattern associated with diseases, unraveling the abnormal genomic make-up in patients suffering from various diseases and selecting treatment module could provide unparalleled benefits for international community and, foremost, for the advancement of translational science, healthcare and economy.Furthermore, genome-wide association studies will provide information on how simple or complex genetic variability impacts on the risk for the development and pharmaco-genomics of various common and rare diseases with genetic components.

2.4 For the purpose of achieving the objective of such Biomedical Research Centre by **HIT-K,** the Institute may enter into similar **MOU**with any other entities who would like to support such research initiatives by **HIT-K. SCL**will not have any objection in anymanner whatsoever.

3.0 Objectives, Scope, and Mainstream Activities

Both the parties agree to encourage the development of the following types of activities:

3.1 Explore the possibilities for developing joint translational research programs and collaborations in fields of shared interest and expertise,

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such as genetic and genomic studies in different diseases in association with treatment schedules, specialty international reference laboratory services and training, and personalized medical care studies.

3.2 Exchange of academic information and materials, researchers, specialized resources and expertise in specific areas of disease oriented genetics, and clinical medicine and other potential fields of mutual interest.

3.3 Visits and informal exchanges of researchers in specific areas of education, research, and outreach.

3.4 Hold Joint video conferences, symposia or other scientific meetings on subjects of mutual interest.

3.5 Further **SCL** agreed to provide financial supportamounting to Rs 2,00,00,000/- (Rupees Two Crore Only) to be released in phases based on the progress of such Research Project and any other research activities which will be carried on hereafter.

4.0 Exchange and cooperation programs to which both partiesagree

The accomplishment of this collaborative agreement will enhance the development of advanced clinical practices and genomics research in India, and participation of other researchers in internationally recognized human genome projects.

5.0 Responsibilities of the Parties

5.1 Both the parties recognize that the implementation of any agreed upon activity will depend upon the interests and expertise of the individuals involved and the availability of financial resources, space and other resources. SCL will provide the financial support to run the research activities.

5.2 Accordingly, the implementation of any exchange and cooperative program based on this MOU shall be separately negotiated and determined between the two Institutions as and when necessary.

5.3 It is further expected that both parties will be compliant with all applicable national, and State laws and regulations, as well as organization/Institutional policies.

6.0 Joint Undertakings

The Parties agree to undertake the following activities:

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6.1 Arrange regular senior operational meetings to discuss organization and developments, future research directions and expectations, and feedback.

6.2 Arrange regular briefings to discuss main concerns in the most efficient and effective way.

6.3 Arrange single points of contact at each organization through whom information can be shared.

6.4 Share information that might lead to a better understanding of the way information is distributed and received by the public and media.

6.5 Identify opportunities to maximize the efficiency of information exchange between the Parties.

7.0 Privacy

The Parties will cooperate to ensure they do not cause the other to breach any privacy obligations that another Party has at law. The outcome of the research work in any case should not be shared by either party to any other agency or individual without mutual consent.

8.0 Meetings and Reporting

To accomplish the purpose and objectives set forth in the **MOU**, **HIT-K & SCL** will exchange progress reports and will meet at least twice a year for the purposes of program planning and monitoring and evaluating outcomes.All decisions at the meeting will be decided by consensus only.

9.0 Duration and Option to Amend, Extend or Terminate

9.1 This MOU will become effective when signed by both parties.

9.2 The agreement will remain valid for a period of **fiveyears** from the date of **MOU** and may be renewed or amended by mutual agreement of the parties.

9.3 The parties agree to periodically review the activities undertaken and the progress made and to consult concerning amendments, renewal or termination of this **MOU**.

9.4 Either party may terminate this **MOU** at any time by providing written notice of such termination to the other party.

9.5 This **MOU** may be amended on the initiative of either party by submitting a proposed amendment in writing to the other party and agreement of that party to the amendment.

7.10.2020

Prof. (Dr.) Pranay Chaudhuri
Principal
Heritage Institute of Technology

Sanjay Gupta
Chief Executive Officer
Star Cement Limited

MEMORANDUM OF UNDERSTANDING (MOU)

BETWEEN

HERITAGE INSTITUTE OF TECHNOLOGY
KOLKATA

AND

CENTURY PLYBOARDS (INDIA) LIMITED
KOLKATA

This **Memorandum of Understanding** (hereinafter called as the '**MOU**') is entered into on this Wednesday 7th day of October Two Thousand Twenty (2020)

BETWEEN

Heritage Institute of Technology, 994, Madurdaha, Chowbaga Road Anandapur, P.O.-East Kolkata Township, Kolkata-700107, West Bengal, the First Party represented herein by its **Principal, Prof. (Dr.) Pranay Chaudhuri**(hereinafter referred as **'First Party'**, the institution which expression, unless excluded by or repugnant to the subject or context shall include its successors – in-office, administrators and assigns).

AND

Century Plyboards (India) Limited, having its registered office at Century House P15/1, Taratalla Road, Kolkata- 700088, the Second Party, and represented herein by its **Chairman, Mr. Sajjan Bhajanka**, (hereinafter referred to as "**Second Party**", company which expression, unless excluded by or repugnant to the subject or context shall include its successors – in-office, administrators and assigns).

(First Party and Second Party are hereinafter jointly referred to as 'Parties' and individually as 'Party')

for

Establishment of a Biomedical Research Centre under the name and style "**Swami Vivekananda Center for Advanced Biomedical Research**" at the Heritage Institute of Technology, Kolkata

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS **MOU**, THE PARTIES HERETO AGREE AS FOLLOWS:

1.0 INTRODUCTION

Heritage Institute of Technology, Kolkata, (referred to as **HIT-K** henceforth) and Century Plyboards (India) Limited (referred to **CPIL** henceforth) are linked by common interests and seek to develop collaborations and exchanges in fields of some shared interest in the field of Biomedical Research particularly Genomic Research. The activities undertaken

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pursuant to this Memorandum of Understanding **(MOU)** are based on a spirit of cooperation and reciprocity that is intended to be of mutual benefit to both parties.

To the extent that the implementation of any agreed upon activity requires a commitment of resources, personnel, or intellectual property, a supplementary agreement must be negotiated and approved by the two parties before work on any of the projects can commence.

2.0 PURPOSE

2.1 This Memorandum of Understanding **(MOU)** serves as a written understanding of agreed upon principles between **Heritage Institute of Technology, Kolkata** and **Century Plyboards (India) Limited** concerning a set of general objectives on commencement of research unit at **HIT-K** initially for Genomic Research. This is a nonbinding agreement and is intended to clarify and to formalize the nature and extent of the complementary activities between key service delivery partners, defines roles and responsibilities and fosters a strong partnership that might be undertaken for the mutual benefit of the two parties.

2.2 Commitments of specific institutional resources, personnel, space, facilities, or any other academic or intellectual activities may be contemplated hereunder but are beyond the scope of this **MOU**.

2.3 Due to some unique abnormal genetic pattern associated with diseases, unraveling the abnormal genomic make-up in patients suffering from various diseases and selecting treatment module could provide unparalleled benefits for international community and, foremost, for the advancement of translational science, healthcare and economy. Furthermore, genome-wide association studies will provide information on how simple or complex genetic variability impacts on the risk for the development and pharmaco - genomics of various common and rare diseases with genetic components.

2.4 For the purpose of achieving the objective of such Biomedical Research Centre by **HIT-K,** the Institute may enter into similar **MOU** with any other entities who would like to support such research initiatives by **HIT-K**. **CPIL** will not have any objection in any manner whatsoever.

3.0 Objectives, Scope, and Mainstream Activities

Both the parties agree to encourage the development of the following types of activities:

3.1 Explore the possibilities for developing joint translational research programs and collaborations in fields of shared interest and expertise, such as genetic and genomic studies in different diseases in association

with treatment schedules, specialty international reference laboratory services and training, and personalized medical care studies.

3.2 Exchange of academic information and materials, researchers, specialized resources and expertise in specific areas of disease oriented genetics, and clinical medicine and other potential fields of mutual interest.

3.3 Visits and informal exchanges of researchers in specific areas of education, research, and outreach.

3.4 Hold Joint video conferences, symposia or other scientific meetings on subjects of mutual interest.

3.5 Further **CPIL** agreed to provide financial support amounting to Rs 2,00,00,000/- (Rupees Two Crore Only) to be released in phases based on the progress of such Research Project and any other research activities which will be carried on hereafter.

4.0 Exchange and cooperation programs to which both partiesagree

The accomplishment of this collaborative agreement will enhance the development of advanced clinical practices and genomics research in India, and participation of other researchers in internationally recognized human genome projects.

5.0 Responsibilities of the Parties

5.1 Both the parties recognize that the implementation of any agreed upon activity will depend upon the interests and expertise of the individuals involved and the availability of financial resources, space and other resources. CPIL will provide the financial support to run the research activities.

5.2 Accordingly, the implementation of any exchange and cooperative program based on this MOU shall be separately negotiated and determined between the two Institutions as and when necessary.

5.3 It is further expected that both parties will be compliant with all applicable national, and State laws and regulations, as well as organization/Institutional policies.

6.0 Joint Undertakings

The Parties agree to undertake the following activities:

6.1 Arrange regular senior operational meetings to discuss organization and developments, future research directions and expectations, and feedback.

6.2 Arrange regular briefings to discuss main concerns in the most efficient and effective way.

6.3 Arrange single points of contact at each organization through whom information can be shared.

6.4 Share information that might lead to a better understanding of the way information is distributed and received by the public and media.

6.5 Identify opportunities to maximize the efficiency of information exchange between the Parties.

7.0 Privacy

The Parties will cooperate to ensure they do not cause the other to breach any privacy obligations that another Party has at law. The outcome of the research work in any case should not be shared by either party to any other agency or individual without mutual consent.

8.0 Meetings and Reporting

To accomplish the purpose and objectives set forth in the **MOU**, **HIT-K &CPIL** will exchange progress reports and will meet at least twice a year for the purposes of program planning and monitoring and evaluating outcomes. All decisions at the meeting will be decided by consensus only.

9.0 Duration and Option to Amend, Extend or Terminate

9.1 This MOU will become effective when signed by both parties.

9.2 The agreement will remain valid for a period of **five years** from the date of **MOU** and may be renewed or amended by mutual agreement of the parties.

9.3 The parties agree to periodically review the activities undertaken and the progress made and to consult concerning amendments, renewal or termination of this **MOU**.

9.4 Either party may terminate this **MOU** at any time by providing written notice of such termination to the other party.

9.5 This **MOU** may be amended on the initiative of either party by submitting a proposed amendment in writing to the other party and agreement of that party to the amendment.

7.10.2020

Prof. (Dr.) Pranay Chaudhuri
Principal
Heritage Institute of Technology

Sajjan Bhajanka
Chairman
Century Plyboards (India) Limited

Memorandum of Understanding
Between
Heritage Institute of Technology
And
Artchala
For
project of Harbal Hand Sanitizer

I. PURPOSE

Biotechnology Department of the Heritage Institute of Technology developed a Herbal Hand Sanitizer in their Research Laboratory. Heritage Institute of Technology intends to transfer the knowhow of the product for commercialization.

The organization Artchalahad carried out the market research for the prospective commercialization of the product. The feedback of research is found technically and financially feasible.

Both the organizations want to move on to next stage of product commercialization.

II. RESPONSIBILITIES

Each party will appoint a person to serve as the official contact and coordinate the activities of each organization in carrying out this MOU. The initial appointees of each organization are:

Heritage Institute of Technology
Prof. SrabantiBasu (product development and research)

Artchala
PijushKantiRana (Market research and commercialization)

In addition to that, *Dr. RimuChaudhuri,* entrepreneurship expert, will act as the advisor to the project.

The organizations agree to the following tasks for this MOU:

Heritage Institute of Technology will:
Advisory, monitor and conduct further development of products

Artchala will:
Will manufacture and do the bottling, packaging and labeling of the product
Will handle the marketing and distribution

From the date of the signing of the present MoU:

ARTCHALA will start production and marketing related activity after getting the necessary permissions required to do so from the concerned authorities.

ARTCHALA will give 10% of the profit to Heritage Institute of Technology as the developer of the product, which may be reviewed annually.

ARTCHALA
Pijush Kanti Rana

III. TERMS OF UNDERSTANDING

The duration of the MoU is three years from the date of execution, which may be terminated with a three-month notice in writing without penalty. The present MoU may be extended upon mutual agreement.

The scope of this MOU is only for Herbal sanitizer product with brand name Green Cura.

Authorization

The signing of this MOU is not a formal undertaking. It implies that the signatories will strive to reach, to the best of their ability, the objectives stated in the MOU.

On behalf of the organization I represent, I wish to sign this MOU and contribute to its further development.

Heritage Institute of Technology

Name: Dr Pranay Chaudhuri

Principal,
Heritage Institute of Technology

19.10.2020
Date

Artchala

Name: Pijush Kanti Rana

ARTCHALA
PROPITOR

21.10.2020
Date

Witness

1. ---------- 19/10/2020

Registrar
Heritage Institute of Technology

2. ----------

MEMORANDUM OF UNDERSTANDING (MOU)

BETWEEN

HERITAGE INSTITUTE OF TECHNOLOGY, KOLKATA

&

SUN OIL COMPANY PVT LTD, KOLKATA

MEMORANDUM OF UNDERSTANDING

This **Memorandum of Understanding** (hereinafter called as the 'MOU') is entered into on this the 1ST day of April Two Thousand Nineteen **(**01/04/2019**)**,

BETWEEN

Heritage Institute of Technology, 994,Madurdaha, Chowbaga Road, Anandapur, PO: East Kolkata Township, Kolkata -700107, the First Party represented herein by its **Principal, Prof.(Dr.) Pranay Chaudhuri** (hereinafter referred as **'First Party'**, the institution which expression, unless excluded by or repugnant to the subject or context shall include its successors – in-office, administrators and assigns).

AND

Sun Oil Company Pvt. Ltd, M.K. Point, 6th Floor, Room No. 604 & 605, 27, Bentinck Street, Kolkata – 700001, the Second Party, and represented herein by Director, **Mr. Aditya Halwasiya**, (hereinafter referred to as "**Second Party**", company which expression, unless excluded by or repugnant to the subject or context shall include its successors – in-office, administrators and assigns).

(First Party and Second Party are hereinafter jointly referred to as 'Parties' and individually as 'Party')

WHEREAS:

A) First Party is a Higher Educational Institution named:

(i) Heritage Institute of Technology

B) First Party & Second Party believe that collaboration and co-operation between themselves will promote more effective use of each of their resources, and provide each of them with enhanced opportunities.

C) The Parties intent to cooperate and focus their efforts on cooperation within area of Skill Based Training, Education and Research.

D) Both Parties, being legal entities in themselves desire to sign this MOU for advancing their mutual interest;.

E) **Sun Oil Company Pvt. Ltd**, the Second Party is engaged in Business, Manufacturing, Skill Development, Education and R&D Services in the fields of ***Manufacturer of Petroleum Products*** and in related fields.

F) **Sun Oil Company Pvt. Ltd**, the Second Party was promoted by **Mr. Hari Shankar Halwasiya and incorporated under the Companies Act**, 1956 and the company is limited.

G) Sun Oil Company is an ISO 9001: 2015 and NABL accredited technology customer focused company established in November 1979. With passage of time Sun Oil has emerged as a leading manufacturer of Industrial Oils & Greases with a modern Oil blending and Grease plant at 238, Rai Bahadur Road, Behala, Kolkata–700053. Sun Oil's laboratory is equipped with Quality Control and Product development facilities. Its R&D personnel are engaged in developing new products as well as improvising the existing ones.

The Sun Oil Co. is head quartered at Kolkata and has its branch in Delhi at 1101A, GD-ITL Tower, Plot No. B-08, Netaji Subhas Place, Pitampura, Delhi – 110034.

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERETO AGREE AS FOLLOWS:

CLAUSE 1 CO-OPERATION

1.1 Both Parties are united by common interests and objectives, and they shall establish channels of communication and co-operation that will promote and advance their respective operations within the **Institution** and its related wings. The Parties shall keep each other informed of potential opportunities and shall share all information that may be relevant to secure additional opportunities for one another.

1.2 First Party and Second Party co-operation will facilitate effective utilization of the intellectual capabilities of the faculty of First Party providing significant inputs to them in developing suitable teaching / training systems, keeping in mind the needs of the industry, the Second Party.

1.3 The general terms of co-operation shall be governed by this MOU. The Parties shall cooperate with each other and shall, as promptly as is reasonably practical, enter into all relevant agreements, deeds and documents (the 'Definitive Documents') as may be required to give effect to the actions contemplated in terms of this MOU. The term of Definitive Documents shall be mutually decided between the Parties. Along with the Definitive Documents, this MOU shall represent the entire understanding as to the subject matter hereof and shall supersede any prior understanding between the Parties on the subject matter hereof.

CLAUSE 2 SCOPE OF THE MoU

2.1 The budding graduates from the institutions could play a key role in technological up-gradation, innovation and competitiveness of an industry. Both parties believe that close co-operation between the two would be of major benefit to the student community to enhance their skills and knowledge.

2.2 **Curriculum Design:** Second Party will give valuable inputs to the First Party in teaching / training methodology and suitably customize the curriculum so that the students fit into the industrial scenario meaningfully.

2.3 **Industrial Training & Visits:** Industry and Institution interaction will give an insight into the latest developments / requirements of the industries; the Second Party to permit the Faculty and Students of the First Party to visit its group companies and also involve in Industrial Training Programs for the First Party. The industrial training and exposure provided to students and faculty through this association will build confidence and prepare the students to have a smooth transition from academic to working career. The Second Party will provide its Labs / Workshops / Industrial Sites for the hands-on training of the learners enrolled with the First Party.

2.4 **Internships and Placement of Students:**
Second Party will actively engage to help the delivery of the Internship and placement of students of the First Party into internships/ jobs, as per AICTE internship Policy. The Second Party will also register itself on AICTE Internship Policy Portal for disseminating the Internship opportunities available with them.

2.5 **Research and Development:** Both Parties have agreed to carry out the joint research activities in the fields of **Petroleum and related resource based products and other chemicals.**

2.6 **Skill Development Programs:** Second Party to train the students of First Party on the emerging technologies in order to bridge the skill gap and make them industry ready.

2.7 **Guest Lectures:** Second Party to extend the necessary support to deliver guest lectures to the students of the First Party on the technology trends and in house requirements.

2.8 **Faculty Development Programs**: Second Party to train the Faculties of First Party for imparting industrial exposure/ training as per the industrial requirement considering the National Occupational Standards in concerned sector, if available.

2.9 Both Parties to obtain all internal approvals, consents, permissions, and licenses of whatsoever nature required for offering the Programs on the terms specified herein

2.10 There is no financial commitment on the part of the **Heritage Institute of Technology,** the First Party to take up any program mentioned in the MoU. If there is any financial consideration, it will be dealt separately. Similarly, there is no financial commitment on the part of SUN OIL COMPANY PVT. LTD., the second party to take up any programme mentioned in the MOU.

CLAUSE 3 INTELLECTUAL PROPERTY

3.1 Nothing contained in this MOU shall, by express grant, implication, Estoppel or otherwise, create in either Party any right, title, interest, or license in or to the intellectual property (including but not limited to know-how, inventions, patents, copy rights and designs) of the other Party.

CLAUSE 4 VALIDITY

4.1 This Agreement will be valid until it is expressly terminated by either Party on mutually agreed terms, during which period the Second Party, as the case may be, will take effective steps for implementation of this MOU. Any act on the part of **Sun Oil Company Pvt. Ltd.,** the Second Party, after termination of this Agreement by way of communication, correspondence etc., shall not be construed as an extension of this MOU.

4.2 Both Parties may terminate this MOU upon 30 calendar days' notice in writing. In the event of Termination, both parties have to discharge their obligations.

CLAUSE 5 RELATIONSHIP BETWEEN THE PARTIES

5.1 It is expressly agreed that **First Party** and Second **Party** are acting under this MOU as independent contractors, and the relationship established under this MOU shall not be construed as a partnership. Neither Party is authorized to use the other Party's name in any way, to make any representations or create any obligation or liability, expressed or implied, on behalf of the other Party, without the prior written consent of the other Party. Neither Party shall have, nor represent itself as having, any authority under the terms of this MOU to make agreements of any kind in the name of or binding upon the other Party, to pledge the other Party's credit, or to extend credit on behalf of the other Party.

First Party	Second Party
Heritage Institute of Technology	Sun Oil Company Pvt. Ltd

Any divergence or difference derived from the interpretation or application of the MoU shall be resolved by arbitration between the parties as per the Arbitration Act, 1996. The place of the arbitration shall be at District Head Quarters of the First Party. This undertaking is to be construed in accordance with Indian Law with exclusive jurisdiction in the Courts of **Kolkata.**

AGREED:

Prof. (Dr.) Pranay Chaudhuri, Principal
For **Heritage institute of Technology**

Principal
Heritage Institute of Technology
Authorized Signatory

Mr. Aditya Halwasiya, Director
For **Sun Oil Company Pvt. Ltd**

SUN OIL COMPANY PVT. LTD.
ADITYA HALWASIYA
Director
10-B, British Indian Street,
Kolkata-700069
Authorized Signatory

Heritage Institute of Technology	**Sun Oil Company Pvt. Ltd**
994, Madurdaha, Chowbaga Road, Anandapur, PO: East Kolkata Township, Kolkata -700107	M.K. Point, 6th Floor, Room No. 604 & 605, 27, Bentinck Street, Kolkata - 700001
Prof.(Dr.) Pranay Chaudhuri, Principal, Heritage Institute of Technology	MR. Aditya Halwasiya, Director, Sun Oil Company Pvt. Ltd.
E-mails: admin@heritageit.edu	E-mails: Info@sunoil.co.in
Web: www.heritageit.edu	Web: www.sunoil.co.in

Witness1:
Dr. Alok Kumar Sen
for Heritage Institute of Technology

(BHABATOSH GIRI)
Witness2:
For Sun Oil Company.

Witness3:
Dr. Sujit Kumar Borua
for Heritage Institute of Technology

(DEVADITYA SIKDAR)
Witness4:
For Sun Oil Company.

MEMORANDUM OF UNDERSTANDING(MOU)

BETWEEN

HERITAGE INSTITUTE OF TECHNOLOGY KOLKATA

&

KERNELSPHERE TECHNOLOGIES PVT. LTD. HYDERABAD

MEMORANDUM OF UNDERSTANDING

This **Memorandum of Understanding** (hereinafter called as the 'MOU') is entered into on this the 11th day of June, Two Thousand Nineteen (11/06/2019),

BETWEEN

Heritage Institute of Technology, 994, Madurdaha, Chowbaga Road, Anandapur, PO: East Kolkata Township, Kolkata-700107, the First Party represented herein by its **Principal, Prof.(Dr.) Pranay Chaudhuri** (hereinafter referred as **'First Party'**, the institution which expression, unless excluded by or repugnant to the subject or context shall include its successors-in-office, administrators and assigns).

AND

KernelSphere Technologies Pvt. Ltd., #201, Sree Swathi Anukar, Beside Aditya Trade Centre, Ameerpet, Hyderabad 500038, the Second Party, and represented herein by its Regional Head - East & North, **Shashi Nath Chaturvedi**, (hereinafter referred to as "**Second Party**", company which expression, unless excluded by or repugnant to the subject or context shall include its successors – in-office, administrators and assigns).

(First Party and Second Party are hereinafter jointly referred to as 'Parties' and individually as 'Party')

WHEREAS:

A) First Party is a Higher Educational Institution named:

(i) **Heritage Institute of Technology**

B) First Party & Second Party believe that collaboration and co-operation between themselves will promote more effective use of each of their resources, and provide each of them with enhanced opportunities.

C) The Parties intent to cooperate and focus their efforts on cooperation within area of Skill Based Training, Education and Research.

D) Both Parties, being legal entities in themselves desire to sign this MOU for advancing their mutual interest.

E) **Kernelsphere Technologies Pvt. Ltd.,** the Second Party is engaged in Business, Manufacturing, Skill Development, Education and R&D Services in the fields of **Industrial Internet of Things, Cybersecurity, AWS Cloud, Blockchain** and related fields.

F) **Kernelsphere Technologies Pvt. Ltd.,** the Second Party is promoted by **Mr. Vinod Kumar, CEO** and incorporated under the Companies Act, 1956 and the company is limited.

G) **Kernelsphere Technologies Pvt. Ltd.** was established in the year 2012. The Head Office of the company is situated at 201, Sree Swathi Anukar, Besides Aditya Trade Centre, Ameerpet, Hyderabad 500038. KernelSphere Technologies is the leading IoT Company in India.

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERETO AGREE AS FOLLOWS:

CLAUSE 1 CO-OPERATION

1.1 Both Parties are united by common interests and objectives, and they shall establish channels of communication and co-operation that will promote and advance their respective operations within the **Institution** and its related wings. The Parties shall keep each other informed of potential opportunities and shall share all information that may be relevant to secure additional opportunities for one another.

1.2 First Party and Second Party co-operation will facilitate effective utilization of the intellectual capabilities of the faculty of First Party providing significant inputs to them in developing suitable teaching / training systems, keeping in mind the needs of the industry, the Second Party.

1.3 The general terms of co-operation shall be governed by this MOU. The Parties shall cooperate with each other and shall, as promptly as is reasonably practical, enter into all relevant agreements, deeds and documents (the 'Definitive Documents') as may be required to give effect to the actions contemplated in terms of this MOU. The term of Definitive Documents shall be mutually decided between the Parties. Along with the Definitive Documents, this MOU shall represent the entire understanding as to the subject matter hereof and shall supersede any prior understanding between the Parties on the subject matter hereof.

CLAUSE 2 SCOPE OF THE MoU

2.1 The budding graduates from the institutions could play a key role in technological up-gradation, innovation and competitiveness of an industry. Both parties believe that close co-operation between the two would be of

major benefit to the student community to enhance their skills and knowledge.

2.2 **Curriculum Design**: Second Party will give valuable inputs to the First Party in teaching / training methodology and suitably customize the curriculum so that the students fit into the industrial scenario meaningfully.

2.3 **Industrial Training & Visits**: Industry and Institution interaction will give an insight into the latest developments / requirements of the industries; the Second Party to permit the Faculty and Students of the First Party to visit its group companies and also involve in Industrial Training Programs for the First Party. The industrial training and exposure provided to students and faculty through this association will build confidence and prepare the students to have a smooth transition from academic to working career. The Second Party will provide its Labs / Workshops / Industrial Sites for the hands-on training of the learners enrolled with the First Party.

2.4 **Internships and Placement of Students**: Second Party will actively engage to help the delivery of the Internship and placement of students of the First Party into internships/jobs, as per AICTE internship Policy. The Second Party will also register itself on AICTE Internship Policy Portal for disseminating the Internship opportunities available with them.

2.5 **Research and Development**: Both Parties have agreed to carry out the joint research activities in the fields of **Industrial Internet of Things, Cybersecurity, AWS Cloud.**

2.6 **Skill Development Programs**: Second Party to train the students of First Party on the emerging technologies in order to bridge the skill gap and make them industry ready.

2.7 **Guest Lectures:** Second Party to extend the necessary support to deliver guest lectures to the students of the First Party on the technology trends and in house requirements.

2.8 **Faculty Development Programs:** Second Party to train the Faculties of First Party for imparting industrial exposure/ training as per the industrial requirement considering the National Occupational Standards in concerned sector, if available.

2.9 Both Parties to obtain all internal approvals, consents, permissions, and licenses of whatsoever nature required for offering the Programs on the terms specified herein

2.10 There is no financial commitment on the part of **Heritage Institute of Technology**, the First Party to take up any program mentioned in the MoU. If there is any financial consideration, it will be dealt separately.

CLAUSE 3 INTELLECTUAL PROPERTY

3.1 Nothing contained in this MOU shall, by express grant, implication, Estoppel or otherwise, create in either Party any right, title, interest, or license in or to the intellectual property (including but not limited to know-how, inventions, patents, copy rights and designs) of the other Party.

CLAUSE 4 VALIDITY

4.1 This Agreement will be valid until it is expressly terminated by either Party on mutually agreed terms, during which period **Kernelsphere Technologies Pvt. Ltd.,** the Second Party, as the case may be, will take effective steps for implementation of this MOU. Any act on the part of **Training Partner** or **Kernelsphere Technologies Pvt. Ltd.,** the Second Party after termination of this Agreement by way of communication, correspondence etc., shall not be construed as an extension of this MOU

4.2 Both Parties may terminate this MOU upon 30 calendar days' notice in writing. In the event of Termination, both parties have to discharge their obligations

CLAUSE 5 RELATIONSHIP BETWEEN THE PARTIES

5.1 It is expressly agreed that **First Party** and **Second Party** are acting under this MOU as independent contractors, and the relationship established under this MOU shall not be construed as a partnership. Neither Party is authorized to use the other Party's name in any way, to make any representations or create any obligation or liability, expressed or implied, on behalf of the other Party, without the prior written consent of the other Party. Neither Party shall have, nor represent itself as having, any authority under the terms of this MOU to make agreements of any kind in the name of or binding upon the other Party, to pledge the other Party's credit, or to extend credit on behalf of the other Party.

First Party Heritage Institute of Technology	Second Party Kernelsphere Technologies Pvt. Ltd.

Any divergence or difference derived from the interpretation or application of the MoU shall be resolved by arbitration between the parties as per the Arbitration Act, 1996. The place of the arbitration shall be at District Head Quarters of the First Party. This undertaking is to be construed in accordance with Indian Law with exclusive jurisdiction in the Courts of **Kolkata**.

AGREED:

For **Heritage Institute of Technology**

Prof. (Dr.) Pranay Chaudhuri
Principal
Heritage Institute of Technology

For **KernelSphere Technologies Pvt. Ltd.**

Shashi Nath Chaturvedi

Heritage Institute of Technology	**KernelSphere Technologies Pvt. Ltd.**
Address: 994, Madurdaha, Chowbaga Road, Anandapur, PO: East Kolkata Township, Kolkata-700107	Address: #201, Sree Swathi Anukar, Beside Aditya Trade Centre Ameerpet, Hyderabad 500 038
Contact Details: +91-033-6627-0614/ 0622/0623	Contact Details:+91-40-4221-8546, +91-99386-59197
E-mails: admin@heritageit.edu	E-mails: shashi@kernelsphere.com
Web: www.heritageit.edu	Web: www.kernelsphere.com

Witness1:

Witness2: 11/6/19.

Witness3:

Witness4: 11/6/19

MEMORANDUM OF UNDERSTANDING(MOU)

BETWEEN

HERITAGE INSTITUTE OF TECHNOLOGY

&

HEMRAJ INFOCOM PRIVATE LIMITED

HEMRAJ INFOCOM PVT. LTD.
Chief Executive Officer

MEMORANDUM OF UNDERSTANDING

This **Memorandum of Understanding** (hereinafter called as the 'MOU') is entered into on this the 13th day of – September – Two Thousand Nineteen **(**13/09/2019**)**,

BETWEEN

Heritage Institute of Technology, 994, Madurdaha, Chowbaga Road Anandapur, P.O.-East Kolkata Township, Kolkata-700107, West Bengal, the First Party represented herein by its **Principal, Prof. (Dr.) Pranay Chaudhuri**(hereinafter referred as **'First Party'**, the institution which expression, unless excluded by or repugnant to the subject or context shall include its successors – in-office, administrators and assigns).

AND

Hemraj Infocom Private Limited, 1st Floor, 46B, Rafi Ahmed Kidwai Rd, Esplanade, Mullick Bazar, Taltala, Kolkata-700016, West Bengal, the Second Party, and represented herein by its Chief Executive Officer, **Mr. Soham Dasgupta**, (hereinafter referred to as "**Second Party**", company which expression, unless excluded by or repugnant to the subject or context shall include its successors – in-office, administrators and assigns).

(First Party and Second Party are hereinafter jointly referred to as 'Parties' and individually as 'Party')

HEMRAJ INFOCOM PVT. LTD.
Chief Executive Officer

Regd. Office : 46B, Rafi Ahmed Kidwai Road, 1st Floor, Kolkata - 700016,
Phone : +91-33-4064 9316 / 2265 4742, E-mail : info@hemrajinfocom.com, website: www.hemrajinfocom.com

WHEREAS:

A) First Party is a Higher Educational Institution named:

(I) Heritage Institute of Technology

B) First Party & Second Party believe that collaboration and co-operation between themselves will promote more effective use of each of their resources, and provide each of them with enhanced opportunities.

C) The Parties intent to cooperate and focus their efforts on cooperation within area of Skill Based Training, Education and Research.

D) Both Parties, being legal entities in themselves desire to sign this MOU for advancing their mutual interest;.

E) **Hemraj Infocom Private Limited**, the Second Party is engaged in Business, Manufacturing, Skill Development, Education and R&D Services in the fields of ***Industrial Automation using IoT*** and related fields

F) **Hemraj Infocom Private Limited**, the Second Party is promoted by **Hemraj Industries Private limited** under the directorship of **Mr. Tapan Kumar Agarwal and Mr Rishi Agarwal,** and incorporated under the Companies Act, 1956 and the company is limited.

G) **Hemraj Infocom Private Limited** started it's operations from 2016 however the company was registered in the year 2017 and is located at 46B Rafi Ahmed Kidwai Road, 1st Floor, Near Park Street Police Station, Kolkata - 700016

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERETO AGREE AS FOLLOWS:

CLAUSE 1 CO-OPERATION

1.1 Both Parties are united by common interests and objectives, and they shall establish channels of communication and co-operation that will promote

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and advance their respective operations within **Heritage Institute of Technology** and its related wings. The Parties shall keep each other informed of potential opportunities and shall share all information that may be relevant to secure additional opportunities for one another.

1.2 First Party and Second Party co-operation will facilitate effective utilization of the intellectual capabilities of the faculty of First Party providing significant inputs to them in developing suitable teaching / training systems, keeping in mind the needs of the industry, the Second Party.

1.3 The general terms of co-operation shall be governed by this MOU. The Parties shall cooperate with each other and shall, as promptly as is reasonably practical, enter into all relevant agreements, deeds and documents (the 'Definitive Documents') as may be required to give effect to the actions contemplated in terms of this MOU. The term of Definitive Documents shall be mutually decided between the Parties. Along with the Definitive Documents, this MOU shall represent the entire understanding as to the subject matter hereof and shall supersede any prior understanding between the Parties on the subject matter hereof.

CLAUSE 2 SCOPE OF THE MoU

2.1 The budding graduates from the institutions could play a key role in technological up-gradation, innovation and competitiveness of an industry. Both parties believe that close co-operation between the two would be of major benefit to the student community to enhance their skills and knowledge.

2.2 **Curriculum Design**: Second Party will give valuable inputs to the First Party in teaching / training methodology and suitably customize the curriculum so that the students fit into the industrial scenario meaningfully.

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2.3 **Industrial Training & Visits**: Industry and Institution interaction will give an insight into the latest developments / requirements of the industries; the Second Party to permit the Faculty and Students of the First Party to visit its group companies and also involve in Industrial Training Programs for the First Party. The industrial training and exposure provided to students and faculty through this association will build confidence and prepare the students to have a smooth transition from academic to working career. The Second Party will provide its Labs / Workshops / Industrial Sites for the hands-on training of the learners enrolled with the First Party.

2.4 **Internships and Placement of Students**: Second Party will actively engage to help the delivery of the Internship and placement of students of the First Party into internships/jobs, as per AICTE internship Policy. The Second Party will also register itself on AICTE Internship Policy Portal for disseminating the Internship opportunities available with them.

2.5 **Research and Development**: Both Parties have agreed to carry out the joint research activities in the fields of **Embedded Systems and IoT.** For this purpose facilities available in the "Embedded Systems Lab" of AEIE department of the Institute (ICT-101) will be upgraded by the second party.

2.6 **Skill Development Programs**: Second Party to train the students of First Party on the emerging technologies in order to bridge the skill gap and make them industry ready.

2.7 **Guest Lectures**: Second Party to extend the necessary support to deliver guest lectures to the students of the First Party on the technology trends and in house requirements.

2.8 **Faculty Development Programs**: Second Party to train the Faculties of First Party for imparting industrial exposure/ training as per the industrial requirement considering the National Occupational Standards in concerned sector, if available.

PC.

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2.9 Both Parties to obtain all internal approvals, consents, permissions, and licenses of whatsoever nature required for offering the Programs on the terms specified herein

2.10 There is no financial commitment on the part of the **Heritage Institute of Technology**, the First Party to take up any program mentioned in the MoU. If there is any financial consideration, it will be dealt separately.

CLAUSE 3 INTELLECTUAL PROPERTY

3.1 Nothing contained in this MOU shall, by express grant, implication, Estoppel or otherwise, create in either Party any right, title, interest, or license in or to the intellectual property (including but not limited to know-how, inventions, patents, copyrights and designs) of the other Party.

CLAUSE 4 VALIDITY

4.1 This Agreement will be valid until it is expressly terminated by either Party on mutually agreed terms, during which period **Hemraj Infocom Private Limited**, the Second Party, as the case may be, will take effective steps for implementation of this MOU. Any act on the part of **Training Partner** or **Hemraj Infocom Private Limited**, the Second Party after termination of this Agreement by way of communication, correspondence etc., shall not be construed as an extension of this MOU

4.2 Both Parties may terminate this MOU upon 30 calendar days' notice in writing. In the event of Termination, both parties have to discharge their obligations

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Chief Executive Officer

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CLAUSE 5 RELATIONSHIP BETWEEN THE PARTIES

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First Party

Second Party

Any divergence or difference derived from the interpretation or application of the MoU shall be resolved by arbitration between the parties as per the Arbitration Act, 1996. The place of the arbitration shall be at District Head Quarters of the First Party. This undertaking is to be construed in accordance with Indian Law with exclusive jurisdiction in the Courts of **Kolkata.**

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Phone : +91-33-4064 9316 / 2265 4742, E-mail : info@hemrajinfocom.com, website: www.hemrajinfocom.com

AGREED:

For **Heritage Institute of Technology**

Authorized Signatory

Principal
Heritage Institute of Technology

For**Hemraj Infocom Private Limited**

HEMRAJ INFOCOM PVT. LTD.
Soham Dasgupta
Chief Executive Officer

Authorized Signatory

Name of Institution	**Name of Industry**
Address: 994, Madurdaha, Chowbaga Road, Anandapur, P.O.- East Kolkata Township, Kolkata-700107	Address: 46B Rafi Ahmed Kidwai Rd, 1st floor, Near Park Street PS, Kolkata - 700016
Contact Details: +91-033-6627-0614/0622/0623	Contact Details : +918285297773
E-mails: admin@heritageit.edu	E-mails: soham@hemrajinfocom.com / info@hemrajinfocom.com
Web: www.heritageit.edu	Web :https://hemrajinfocom.com / http://innovationfactory.app

Witness1: 13/09/19

Witness2:

Witness3: 13/09/19

Witness4:

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FREEFLOW

INCUBATION | VENTURE BUILDERS

MOU for Innovation Enablement Training and Ecosystem Development

MEMORANDUM OF UNDERSTANDING

Between

Heritage Institute of Technology – Entrepreneurship Development and Incubation Cell (HIT-EDIC)

AND

Mindspace Ventures (FreeFlow)

The general objective of this Memorandum of Understanding (MOU) is to stimulate and facilitate the development of collaborative and mutually beneficial programs which serve to enhance the intellectual life and cultural development at both ends and to contribute to increase academic cooperation. Thus, **Heritage Institute of Technology – Entrepreneurship Development and Incubation Cell (HIT-EDIC)** and **FreeFlow** have agreed that in support of their mutual interests in the field of innovation @campus, Startup formations, disruptive research and corresponding education,

1. The two entities shall:
   - cooperate in the exchange of information relating to their activities in teaching and research in fields of mutual interests
   - work towards the consolidation of the mission of seeing a sum total of 10 registered start-ups , 300 impacted students (minimum) and a total realization of the innovation ecosystem of the college.

- conduct short set of interactions (with the stakeholders), as mutually agreed in writing between the parties prior to commencement of this activity
- conduct programs, mutually agreed in writing between the parties prior to commencement of this activity

- The aim of the Memorandum of Understanding shall be to achieve a broad balance in the respective contributions and benefits of the collaboration, and this shall be subject to periodic assessments by **Heritage Institute of Technology – Entrepreneurship Development and Incubation Cell (HIT-EDIC).**

- In the implementation of specific cooperative programs, a written agreement covering all relevant aspects including funding and the obligations to be undertaken by each party will be negotiated, mutually agreed and formalized in writing, prior to the commencement of the program. The stage wise program is as follows:

A ten-point plan to achieve the target of 10 or more working, registered and broadly traction worthy startup ideas from a campus as diverse as yours. The way ahead is as follows:

1. We launch a common "umbrella based" (on the lines of connecting the various mouthpieces of the college in the form of the various) awareness camp through the various disciplines of Heritage Institute of Technology over the course of two days and a dedicated session based methodology of 2 hours with each discipline (or combined inter disciplines) , wherein we introduce to the students
   • the elements of disrupting the status quo (going beyond or for the first time using their academics and the industry that beacons with it !!),

   • pushing the envelopes of innovations (combining with inter disciplinary talents and drafting proposals of product, process or platform innovation via streaks of intuitive intelligence, common sense and glorious permutations) and

   • opening up the horizons of opportunity via Starting-up!!

   • A complimentary Entrepreneurial ACUMEN assessment test to be given by all the students in a 15- minute period.

   Tentative Timeline: week of 19th September, 2019.

2. First Draft of problem areas and individual ideas to be submitted to selected FPoCs (First Point of Contacts) with formed or unformed teams, on a proprietary platform of submission (to be provided by Team FreeFlow).
   Timeline: By 16th October 2019.

3. Initial scrutiny and ad-hoc allocation of complimentary teams (, if need be) for the best 20 teams from campus across all institutes with allocated mentor triplet of:

   • Internal Mentors (Professors and Designated Subject Matter Experts)

   • Distinguished Alumnus (intending to pass on the exclusive tid bits from the industry and diversify via giving back to their Almamater)

• Industry Mentors (External and with startup Inclination) Timeline (for preliminary event and first cohort selection): By 23rd October, 2019.

4. 45 day exhaustive interaction of,

   • Selected Teams to mentor,

   • Selected Teams to peers,

   • Selected Teams to freelancers (both internal and external, especially the ones who could not make the cut to the Top -20, but are desirous of an impact skill-wise),

   • Selected Teams to Actual Startup

   via a unique PhyGital Mode, where the teams get to interact with their complimentary expectations (as above) over a series of individual visits, product/platform/service development ice-breakers, and most importantly over the open network (via web cast and live streams).

   • Usage of the Available and upgradable College Infrastructure (the iEcoPods – Innovation Ecosystem Pods**).
   Timeline of Stage: By 6th November, 2019
   Achievable post the stage: Individual Proof of Concepts.

5. First Grand Pitch (a 20 minutes explainer followed by Q&A and an exhaustive plan estimation in 4 separate panels) in front of :

   • The Kalyan Bharti Trust Representatives

   • The execution and administration team representatives

   • The Faculty Co-ordinators of the various clubs

   • The Mentor Triplet (as above and with distributed availability)

   • Eminent Ecosystem Invitees (stakeholders, early stage investors, external mentors)

   • Team FreeFlow

   Timeline: By 16th November, 2019

6. Selection of the best "10 ideas – PoCs" for proper venture building, with stakeholder assignment and compliance initiation (with proper stake of the college in the process of formation of the firms/entities as guarantors, guardians and guiding light of motivation towards the finishing line).

   Timeline: Announcement by 22nd November, 2019

PC.

7. Through the examination and vacation periods the following activities are planned on startup to startup basis):

   • directed launch plan development

   • Nitty gritty of IP protection

   • Estimations and projection development

   • Share Holding and co-founding agreements

   • Preliminary market analysis and alignment

   • Launch date locking and initial investment offers

   • Risk Proofing and Proprietary Fund Pool creation

   • Initial pay-outs to all complimentary and contributing resources (on pre-aligned terms) Timeline: By 21st January, 2020

8. Grand Launch of ready Startups with the Group as a client and a propagator via proper media coverage and integrated approach release.

9. Integration offers to different Government Bodies (state and central) via the 2nd Grand Pitch inviting a distinguished panel, as mentioned in point 5, plus representatives of the state startup policy, startup India Team, and Invest India Team (to be arranged by FreeFlow and i&We team complimentarily.)

   Timeline: By 21st January, 2020 (for stage 8 and 9)

10. "The Brand Ambassadors of opportunity creation" – the graduation of the cohort

    • a recognition of the best plans,

    • the best launches,

    • the first set of investment outlays (via the trust, or independent angel/PE investors),

    • the scale up plan sharing and

    • the awards,

    and most importantly the mission launch of the second cohort, with bigger milestones, targets and achievable.

    Timeline: 3rd February, 2020

➢ The Branding & Promotion of the programs to be done by both the parties by mutual sharing of expertise and mediums.

PC.

- Each activity is aimed at a consolidation of start-ups and the overall cultivation of the innovation ecosystem of the institute and its inter disciplinary incubation center.

- **Deliverables @ Heritage Institute of Technology – Entrepreneurship Development and Incubation Cell (HIT-EDIC)**

    - Infrastructure (improving and evolving as per requirements)
    - Coordination services
    - Support Services of the faculty and clubs especially the Entrepreneurship Development Cell
    - Overall Branding & Promotion
    - Neutral Assessments and provision of Academic Calendar based availability.
    - Heritage Institute of Technology – Entrepreneurship Development and Incubation Cell (HIT-EDIC)Assessments
    - Financial obligation correspondence
    - Other logistics
    - Captive Participants
    - Certifications and recognitions for students (if any)

- **Deliverables @ Learning Partner**

    - Training, Awareness and Launch of the Innovation Ecosystem Development Program
    - Scheduling mentor meets, per startup interactions and platform support
    - Branding "Heritage Institute of Technology – Entrepreneurship Development and Incubation Cell (HIT-EDIC)"
    - Assessment & its report of selected and unselected students
    - Certifications, support and Startup/Invest India participations.

Note: Failing to maintain a mutually agreeable standard of the understood services and deliverable would lead to the termination of the agreement.

In the implementation of specific cooperative programs, a written agreement covering all relevant aspects including funding and the obligations to be undertaken by each

party will be negotiated, mutually agreed and formalized in writing, prior to the commencement of the program.

This agreement will take effect from the date of its signing and shall be valid for an unlimited period from that date unless sooner terminated, revoked of modified by mutual written agreement between tile Parties, and may be extended by mutual written agreement.

Either party may terminate the Agreement at any time during tile term by the provision of three months written notice to the other party.

SIGNATURES:

11/09/2019

Principal
Heritage Institute of Technology
Signed on Behalf of **HIT-EDIC**

Principal
Heritage Institute of Technology

Aaquib Hussain

Aaquib Hussain (Director & Creative Head)
Mindspace Ventures (FreeFlow)

Memorandum of Understanding

Between

Electronics Center of Excellence (e-COE)

And

Heritage Institute of Technology,

Kolkata

Memorandum of Understanding

About Electronics Center of Excellence (e-COE):

e-COE (Electronics Center of Excellence) has been established by Electronics Sector Skills Council of India (**ESSCI**), GOI, under the **Skill India program** of **Govt. of India** under mentorship of India Electronics & Semiconductor Association (**IESA**). The center is located at DCB-621, DLF Cyber City, Patia, Bhubaneswar.

Electronic Center of Excellence (**e-COE**) is a localized hub with three primary focus areas –

1) Industry oriented Training for Electronics System Design & Manufacturing (ESDM)
2) Industry-Academia Research for productization
3) Incubations with Technology solutions for social impact

As one of the primary responsibility, **e-COE** provides industry oriented semiconductor electronics courses in VLSI Domain. Pedagogy of these courses are based on direct guidance of **ESDM** Industry experts. Each training program also have a counselling, interaction and mock interview by **ESDM** industry experts and industry partners.

At the end of the course the students are certified by **e-COE**. In addition to this, **ESSCI** conducts an assessment test based on which ESSCI certification is provided to qualified students. So by the end of course, students get a Govt. of India certification in VLSI training. e-COE provides Placement Assistance to the trained students, e-COE helps students to get connected to Internship Opportunities at the end of the courses.

About Heritage Institute of Technology, Kolkata (HITK):

Heritage Institute of Technology, 994, Madurdaha, Chowbaga Road, Anandapur, P.O. East Kolkata Township, Kolkata – 700107, West Bengal, India, is a **NBA**, **NAAC** accredited **leading Private Engineering college** as established in 2001 and affiliated to Maulana Abul Kalam Azad University of Technology, West Bengal (formerly known as West Bengal University of Technology). This institute gained **'Autonomous Status'** in 2014. Heritage Institute of Technology is a leading College offering (a) Undergraduate and Postgraduate courses in (i) Engineering and Technology and (ii) Applied Sciences, leading to **B.Tech, M.Tech and MCA Degrees** in different disciplines.

Electronics Center of Excellence (**e-COE**) hereinafter will be called and referred to as "**e-COE**" (which term of expression shall, unless excluded by or repugnant to the context or subject, be deemed to mean and include its successors-in-office, administrators, legal representatives and/or assigns) on the ONE PART

and

Heritage Institute of Technology, Kolkata (**HITK**) hereinafter will be called and referred to as "**HITK**" (which term of expression shall, unless excluded by or repugnant to the context or subject, be deemed to mean and include its successors-in-office, administrators, legal representatives and/or assigns) on the OTHER PART.

1. Purpose of the Agreement:

e-COE and **HITK** have mutually agreed to work together for:

1) Industry oriented **Training** for Electronics System Design & Manufacturing (**ESDM**)
2) Industry-Academia **Research** for productization

e-COE and **HITK** have mutually agreed to work together for training of **HITK** students on VLSI and its related domain at the **e-COE** Center to make them employable in core Semiconductor Industry. **e-COE** also works closely with its industry partner in semiconductor area and gets them connected to the students for possible scope of **internship** and **job** in respective organizations.

Another priority is to endeavor into state-of-the-art collaborative **Research** in the field of Electronic System Design and Manufacturing (**ESDM**) and Internet of Things (**IoT**).

e-COE and **HITK** envision this partnership to excel the growth of **ESDM** manpower development and research mindset in Electronics promoting the initiative of **Make-in-India**. This agreement describes their understandings and commitments to this effort.

2. Scope and Duration:

e-COE and **HITK** will work together to bring & train the students into the domain of VLSI for various employment oriented programs. They will also engage into collaborative Research in VLSI Domain.

Initial duration of this agreement is from **September 25, 2018** to **September 24, 2020**. The same can be renewed in future on mutually agreed terms & conditions.

The aforementioned agreement shall specifically be focused and will execute in the following way:

Partnership related to Training –

i. **HITK** will encourage their students to join for different Industrial training programs of **e-COE** depending upon the course levels and the batch of the student. For example, if the students who have passed second year may join in basic VLSI Design Engineer Course, whereas those who have completed the VLSI Design Engineer Course can join Cadence based Physical Design/Analog Design Engineer & other higher-level courses etc.

ii. There are Industrial Training programs to be completed by students as per **HITK** Autonomy Syllabus as well as Curriculum prescribed by AICTE. Students successfully completing **e-COE** Industrial training programs will achieve full credits.

iii. The students will get a completion certificate after the end of course from **e-COE**. Then **e-COE** will arrange for **ESSCI** (Electronics Sector Skills Council of India) certification examination after the end of the course. **e-COE** will ensure no clash of examinations of **e-COE** with that of **HITK**.

iv. At the end of **e-COE** certification, students are highly encouraged to continue a project in the domain in **HITK** VLSI LAB. Some level of guidance / assistance will be provided by **e-COE** Experts through occasional review till passing out of the program, at no extra cost.

v. 40 students can be trained in a batch at a given time.

vi. Students will be exposed to semiconductor industry bodies increasing the potential of internship opportunities and/or direct placement in core sector companies for Electronics.

vii. Overall training offerings are distributed in three levels of program- Level 1, Level 2 and Level 3. Level 1 is a basic program with general exposure to various aspects of the domain. Level 2 goes to specific of a particular vertical e.g. Digital Design or Analog design. Level 3 is on hands on project for a specific niche skill e.g. Analog layout or Physical design.

viii. Students based on their ability and interest can start from level 1 and move up the value chain. Interested industry partners will also start interacting post level 1 training is completed.

ix. Interested Students who will join the Training Programs need prior permission of Institute authority and will bear Training Cost depending on course Level. **e-COE** VLSI Training Program is shown below.

Electronic Center of Excellence (e-COE) VLSI Training Program

Name of Program	Duration	Key Contents	Purpose	Eligibility
Level 1: VLSI Design Engineer	4 weeks (250 hrs)	Basics of Digital and Analog design, Simple CMOS IC Design and layout	Entry level training providing a hands-on exposure of different domains in ESDM.	2nd / 3rd Year B Tech 1st Year M Tech
Level 2: Analog Design Engineer	6 weeks (300 hrs)	Analog/Mixed Signal Design and Layout, CMOS circuit design basics	Beginners training into Analog design basics with hands-on experience.	Completion of Level1 3rd/4th Year B Tech 2nd Year M Tech
Level 2: Digital Design Engineering	6 weeks (300 hrs)	Fundamentals of Digital Circuits and Systems, CMOS Digital Circuits and Analysis	Beginners training into Digital front end and back end design with hands on experience.	Completion of Level1 3rd/4th Year B Tech 2nd Year M Tech
Level 3: Internship	6 months-1 year	Chip design project on Analog, Digital Design or hardware characterization	Live project execution on projects relevant to industry	Completion of L1 and L2 (any one) Final year B Tech Final Year M Tech

Partnership related to Research –

i. **e-COE** is engaged in development of Integrated chips of VLSI designs for advance **IoT** applications. **HITK** faculty and students will be allowed to participate in this research program and be part of Chip development in latest Technologies.

ii. One of the Research and Development (R & D) plan is collaborative Micro-chip development where **HITK** team with own embedded Memory Design for Venus Chip (**India Chip Program**) to be fabricated in **TSMC** (Taiwan Semiconductor Manufacturing Corporation) in 65nm Process, one of the latest Technology.

iii. For collaborative research, special preference will be given to students who already completes the necessary training with **e-COE**.

iv. The VLSI chip design can be shown as final year B.Tech project during 4th year and/or final year M Tech VLSI project. Necessary access to Technology and CAD Tools (Software and Hardware) will be provided at **e-COE** center and **HITK** VLSI LAB as needed.

v. On successful completion of the Research, design will be reviewed by industry experts and will be part of Silicon Fabrication.

vi. It is expected and assumed that several papers and patents can be developed out of this exercise.

3. **Decision-making structure & authority:**

e-COE and HITK each will identify one person (SPOC) within their own organization to serve and execute the program smoothly.

4. **Legal & financial structure:**

The **e-COE** will be responsible for the completion of the training. In case not completed, legally **e-COE** will return cost for training fully to concerned **HITK** Students.

5. **Resource Commitment to the Collaboration:**

e-COE will make sure that best of the faculty members are taking classes for the training of the **HITK** students.

6. **Commercialization:**

The output from the training program/project can be published/shown as the joint collaboration work of **e-COE** and **HITK**.

7. **Termination of this agreement:**

HITK or **e-COE** retains the right to withdraw from the collaboration upon giving the other participating organizations at least 30 days prior notice of its decision to withdraw.

8. **Extension or Amendment of this agreement:**

This agreement may be extended or amended only through unanimous agreement between **e-COE and HITK**. The decision to amend or extend the agreement, and language describing the agreed upon changes, shall be documented in writing, including the date of the amendment/extension, and the signatures of the Director/Concerned Authority of each participating organization.

9. Disputes and differences of this agreement:

Both **e-COE** and **HITK** agree that disputes and differences, if any, arising out of this Memorandum regarding interpretation of any of the terms and conditions herein contained or touching these presents or determination of any liability, residual or otherwise, shall be resolved, reconciled and settled amicably through dialogue and discussion between the parties. If needed a committee can be formed involving members of **e-COE** and **HITK** management.

This agreement was unanimously adopted by designated representatives of **e-COE** and **HITK** on date: 03/10/ **-2018**.

Principal
HITK

Principal
Keritage Institute of Technology

Heritage Institute of Technology * Kolkata *

Date: 3. 10. 2018

Director
e-COE

Date: 3-10-2018

e-COE Centre of Excellence * Electronics * DCB-621, DLF Cyber City, Patia, BBSR

Memorandum of Understanding

Between

DXCorr Hardware Technologies Pvt. Ltd.

And

Heritage Institute of Technology,
Kolkata

MEMORANDUM OF UNDERSTANDING

THIS MEMORANDUM OF UNDERSTANDING entered into on this

11 day of AUGUST, 2017 between DXCorr Hardware Technologies Pvt. Ltd., a company established in 2005, having its India Headquarter at #No. 45 Sri Sai Complex, Bhoopsandra Main Road, RMV 2nd Stage, Bangalore – 560 094, and Corporate Headquarter at Suite #214, 121 West Washington Avenue, Sunnyvale, California 94086, USA hereinafter called and referred to as "DXCorr" (which term of expression shall, unless excluded by or repugnant to the context or subject, be deemed to mean and include its successors-in-office, administrators, legal representatives and/or assigns) on the ONE PART.

AND

Heritage Institute of Technology, 994, Madurdaha, Chowbaga Road, Anandapur, P.O. East Kolkata Township, Kolkata – 700107, West Bengal, India, a private engineering college established in 2001, affiliated to Maulana Abul Kalam Azad University of Technology, West Bengal (formerly known as West Bengal University of Technology) and gaining 'Autonomous Status' in 2014, hereinafter called and referred to as "Heritage" (which term of expression shall, unless excluded by or repugnant to the context or subject, be deemed to mean and include its successors-in-office, administrators, legal representatives and/or assigns) on the OTHER PART.

WHEREAS DXCorr provides Industry's leading edge VLSI Physical IP Solutions for a wide range of VLSI SOC Designs used across a broad spectrum of performance oriented power optimized applications. Leading edge VLSI physical IP includes SRAMs, ROMs, Standard Cells, I/Os, TCAM, Multiport Register Files, Customizable Datapath etc.

AND WHEREAS Heritage is a leading College offering (a) Undergraduate and Postgraduate courses in (i) Engineering and Technology and (ii) Applied Sciences, leading to B.Tech, M.Tech and MCA Degrees in different disciplines.

AND WHEREAS both DXCorr and Heritage have concurred that it shall be in their common interest as well as in the best interest of both Academia and the Industry to enhance Research and Development (R & D) for Continual

Development, up-gradation of Technology, Innovation and Training in the field of VLSI Design, Layout, Verification Methods and Nano-technology.

NOW THEREFORE to act in a collaborative manner to fulfill the common desire as aforementioned, DXCorr and Heritage enter into this Memorandum of Understanding (MoU) on this 11 day of AUGUST, 2017 by putting their respective seals and signatures on this Memorandum of Understanding, both the parties hereto agree to work together in an environment of mutual trust and cooperation as per the modalities inscribed hereafter.

MODUS OPERANDI

1) To provide scope of working in Core Semiconductor Industry, DXCorr will do recruitment of graduating B.Tech ECE (and other B.Tech/M.Tech Program as applicable) and M.Tech VLSI Students of Heritage if there is any requirement from Company side as well as matching skill from Heritage student side. DXCorr will also consider offering Internship program to Heritage Students.
2) DXCorr Team members and Heritage faculty & Students (primarily ECE B.Tech and M.Tech VLSI Students) will form Development Team to work in collaborative projects. These projects will be in the area of VLSI Digital and Memory Design/Layout/Verification and Hardware.
3) DXCorr will provide Technology and CAD Infrastructure facility to Heritage through remote access (vpn/vnc technology) to work on collaborative projects. Heritage will ensure that faculty/students get remote access in CPU Terminals of VLSI LAB to work on these projects.
4) DXCorr will provide opportunity to Heritage students to work on latest and greatest Nano-technology and VLSI Design in Industry today. This will tremendously enhance Heritage Students' employability and job opportunity in Core Semiconductor Sector.
5) In order to protect DXCorr Intellectual Property, Trade Secret and Technology Confidential Information, any Heritage member who will

work in collaborative project will have to sign Non Disclosure Agreement.

6) Any Intellectual Property created/developed may be patented or published in Journal/Conference jointly by the inventors, Heritage and DXCorr. Exclusive right for use of the invention as patented, so far as it concerns marketing and business, shall vest with DXCorr. Heritage may receive 5% of such proceeds as may accrue from such commercialization.
7) Krishanu Datta, Associate Professor of ECE Department of Heritage will lead and coordinate this collaborative activity from Heritage side. Heritage will allow Krishanu Datta to visit DXCorr Bangalore Office, not more than a day per week, so that he can interact face to face with DXCorr Design Team. DXCorr will take care his travel, accommodation and other expenses in Bangalore.
8) The Administrative contact point and Technical & Academic contact point will be as mutually agreed by both parties.

DECLARATION

Both DXCorr and Heritage are pleased to enter into this Memorandum of Understanding and believe that such an understanding would lead to a continuing period of meaningful interaction and co-operation between the parties hereto.

Both the parties hereto further agree that they shall uphold the spirit of this agreement and shall strive to continually develop the various aspects envisaged in this Memorandum of Understanding.

Unless otherwise terminated prematurely through mutual agreement or because of a *force majeure*, this Memorandum of Understanding will be in force for a period of Three (3) Years from the date of signing of this memorandum, provided that, if both the parties hereto so desire, the

Memorandum may further be renewed/continued, with or without any modification or amendment, as may be agreed to by both DXCorr and Heritage.

Both DXCorr and Heritage agree that disputes and differences, if any, arising out of this Memorandum regarding interpretation of any of the terms and conditions herein contained or touching these presents or determination of any liability, residual or otherwise, shall be resolved, reconciled and settled amicably through dialogue and discussion between the parties.

The parties hereto set and subscribe their respective hands and signatures this 11 day of AUGUST, Two Thousand Seventeen.

Signed on behalf of
DXCorr Hardware Technologies
Pvt. Ltd.

DXCORR HARDWARE TECHNOLOGIES PVT. LTD.

Authorised Signatory

(Signature and seal of the authorized signatory, DXCorr)

Signed on behalf of
Heritage Institute of Technology,
Kolkata

Principal
Heritage Institute of Technology

(Signature and seal of the Principal, Heritage)

MEMORANDUM OF UNDERSTANDING

BETWEEN

SEMI-CONDUCTOR LABORATORY

DEPARTMENT OF SPACE, GOVERNMENT OF INDIA

S.A.S. NAGAR

AND

HERITAGE INSTITUTE OF TECHNOLOGY

KOLKATA

FOR

COLLABORATION ON RESEARCH AND DEVEOPMENT,

FACULTY AND STUDENT EXCHANGE

MEMORANDUM OF UNDERSTANDING

In furtherance of their mutual interest in the fields of education and research and as a contribution towards increased national cooperation, Semi-Conductor Laboratory, Department of Space, Government of India,Sector 72, S.A.S. Nagar – 160071, Punjab, India (hereinafter referred to as SCL) and Heritage Institute of Technology, 994, Madurdaha, Chowbaga Road, Anandapur, P.O. East Kolkata Township, Kolkata – 700107, West Bengal, India (hereinafter referred to as HITK) have entered into this Memorandum of Understanding (MOU) in the month of August 2017 as set forth below:

ARTICLE I

The MOU involves collaboration between SCL and HITK (both also referred to as institution) in related disciplines.

The two institutions shall seek to promote:

1. Exchange of Staff and Students (Faculty &Research Scholars; Under Graduate, Post Graduate & Doctoral Students and Research Project Employees) regarding Academics and Research for the mutual benefit of both institutions.

2. Exchange of Students for pursuing Courses of Study and Academic Programmes for mutual benefit of both institutions.

3. Collaboration in Teaching, Research & Development and Consultancy Activities.

4. Exchange of Academic &Research Material and Publications/IPs.

5. Cooperation in Projects and Research Activities of mutual interest.

6. Provision of Cultural and Intellectual enrichment opportunities for the Staff and Students of both institutions.

7. Collaboration in Research & Development in the areas of (i) Advanced VLSI Device Fabrication,(ii) MEMS Fabrication, (iii) VLSI Device/ MEMS Characterization, (iv) VLSI/CMOS-RF Circuit Design and(v) VLSI Device Modeling at both HITKand SCL. This also includes collaboration in setting-up and upkeep of the relevant infrastructure in both the institutions.

8. Publication of Research Papers in International Scientific Journals and in the Conferences.

9. Exchange of Students for Summer/Winter Internships

10. Publication of Intellectual Properties (IPs) developed jointly through Project/ Research Collaboration. Such IPs would acknowledge joint inventor-ship of Personnel/Students belonging to both the institutions, as applicable.

11. Writing Books/Booklets jointly in the areas of mutual interest.

ARTICLE II

The activities under this MOU will include:

1. Staff Exchange

   Staff Exchange activities cover visits to either institution for any of the following purposes:

   (i) Undertaking Joint Research

   (ii) Attachment of Staff for purposes of Curriculum Development &Review, Attendance in Courses and Upgrading of Teaching &Research Skills

   (iii) Participation in Seminars, Colloquia and other types of academic discussions

   (iv) Contributions to Teaching Programmes

   (v) Co-supervision of Post Graduate Students

   (vi) Conduct study tours, joint consultancy and research work.

   (vii) Facilitation for pursuing Academic Courses (Post Graduate & Doctoral) for Department of Space / SCL Employees at HITK.

2. Student Exchange:

   Student Exchange activities (for Under Graduate, Post Graduate & Doctoral Students) cover visits to either institution for any of the following purposes:

   (i) Participation in Research

   (ii) Internships for HITKStudents at SCL

3. Exchange of Academic Materials:

   Exchange of relevant Academic Materials will be carried-out subject to mutual agreement of both institutions.

ARTICLE III

Implementation of cooperation based on this MOU shall be dealt with between the relevant Faculties and Divisions/ Departments of both institutions. Wherever necessary, a specific plan shall be worked-out for each activity setting-forth detailed arrangements for collaboration. Such plans shall be subject to approval of the appropriate authorities of each institution. To facilitate development of such plans, each institution shall nominate a member of its staff to coordinate activities arising under this MOU.

ARTICLE IV

Both institutions agree and undertake to keep confidential at all times information and/or data that may be exchanged, acquired and/or shared in connection with the area of cooperation, as mentioned above, unless otherwise the same information already exists in the public domain.

ARTICLE V

Ownership of findings of any joint research shall be vested in both institutions to this MOU and any publications regarding the same shall only be possible after prior approval from both institutions.

ARTICLE VI

The MOU shall remain in force for a period of 10 (TEN) years commencing from the date of signing and may be reviewed by mutual consent by serving 3 (Three) months written notice to the other institution. Upon renewal, both institutions shall select either to proceed with the existing or new terms of understanding.

ARTICLE VII

Both the SCL and HITK reserve the right to terminate this MOU by either institution giving 3 (Three) months written notice to the other. Where such termination occurs, the provisions of this MOU shall continue to apply to ongoing activities until their completion.

ARTICLE VIII

Participating staff and students involved in any activities under this MOU must adhere to the law of the country and the rules &regulations of the host institutions.

ARTICLE IX

SCL and HITK welcome establishment of this MOU for cooperation and jointly agree to provisions as set out above. There are two copies of this MOU equally valid, one for each institution, effective after its signing by authorized signatories.

Semi-Conductor Laboratory

.....

Dr. Surinder Singh, Director

सुरिन्दर सिंह / Surinder Singh
निदेशक / Director
सेमी-कंडक्टर लेबोरेटरी
Semi-Conductor Laboratory
अंतरिक्ष विभाग, भारत सरकार
Department of Space, Govt. of India
सैक्टर-72, एस.ए.एस. नगर-160071, पंजाब, भारत
Sector-72, S.A.S. Nagar-160071, Punjab, INDIA

Witness

Date: 08/08/17

ग्रुप प्रमुख-परियोजना नियोजन ग्रुप
Group Head-Project Planning Group
सेमी-कंडक्टर लेबोरेटरी
Semi-Conductor Laboratory
अंतरिक्ष विभाग, भारत सरकार
Department of Space, Government of India

Heritage Institute of Technology, Kolkata

.....

Prof. (Dr.) Pranay Chaudhuri, Principal

Principal
Heritage Institute of Technology

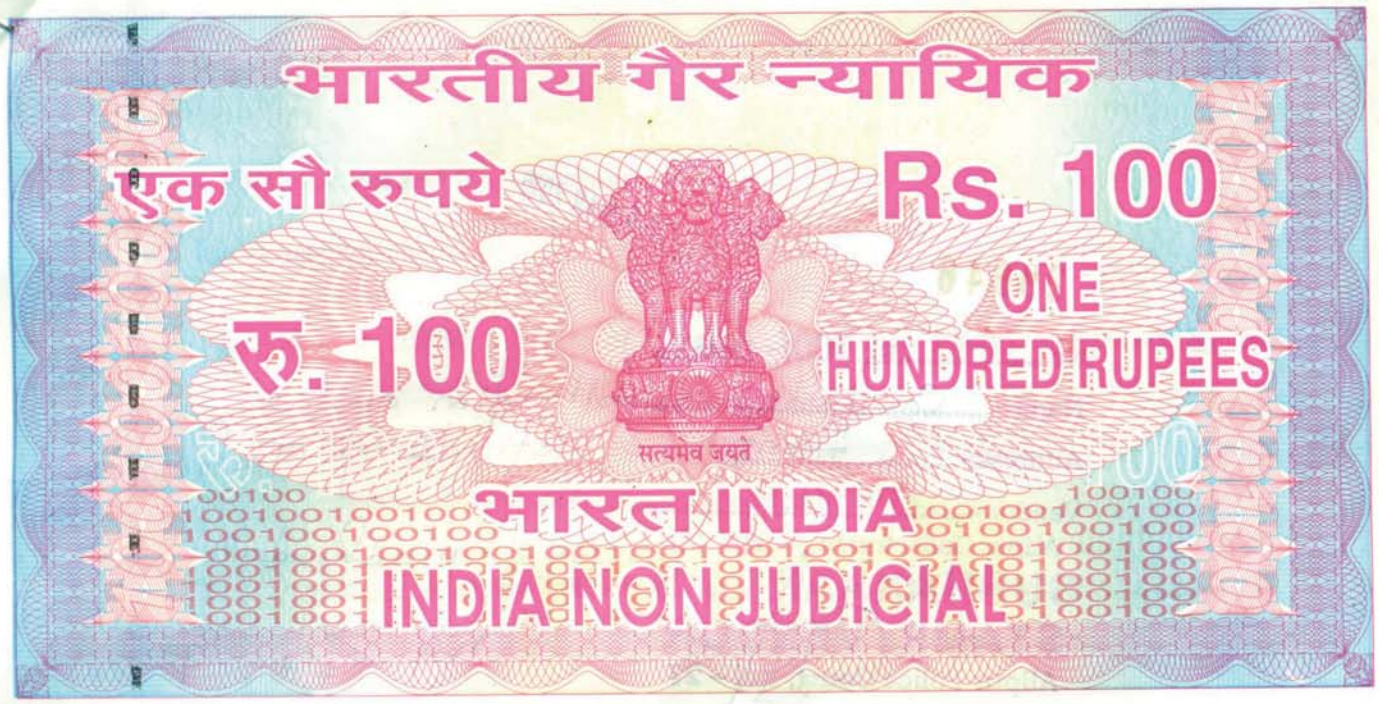
Witness

Registrar
Heritage Institute of Technology

Date:

Abstract of the MOU

1. Collaboration in Research &Development in the areas of (i) Advanced Micro sensor/ device Fabrication,(ii) MEMS Fabrication, (iii) VLSI Device/ MEMS Characterization, (iv) CMOS-RF Circuit Design and(v) Micro- Device Modeling at both HITK and SCL. This also includes collaboration in setting-up and upkeep of the relevant infrastructure in both the institutions.
2. Exchange of Students for Summer/Winter Internships.
3. Facilitation for pursuing Academic Courses (Post Graduate & Doctoral) for Department of Space / SCL Employees at HITK.



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MEMORANDUM OF UNDERSTANDING (MOU)

BETWEEN
INDIAN INSTITUTE OF ENGINEERING SCIENCE AND TECHNOLOGY, SHIBPUR (IIEST)

AND

HERITAGE INSTITUTE OF TECHNOLOGY, KOLKATA (HITK)

1. Preamble:

IIEST, Shibpur and HITK have agreed for a long term institutional collaboration in education and research. The primary objective is to promote contact and collaboration between members of faculty, staff and the students, carry out joint research programmes, cooperation in academic programmes, organize seminars, workshops on mutually agreed activities. This document presents a general framework for such a relationship.

2. Participation and Coordination:

The partnership shall initially be between the following:

- For IIEST : Centre of Excellence for Green Energy and Sensor System (CEGESS)
- For HITK: Heritage Institute of Technology, Kolkata (HITK) and other associated group of institutions decided by HITK.

Other Departments, Centres and Schools from IIEST and other Departments, Centres and Schools from HITK will be covered under the MOU as and when required.

Professor H. Saha of CEGESS shall be the Coordinator from IIEST and Prof. Alok Kr. Sen of HITK shall be the Coordinator from HITK. There shall be a Management Committee comprising members nominated by the Director, IIEST, Shibpur and the Principal, HITK to coordinate the collaborative activities. The participants and the coordinators may change the nature of activities from time to time as decided by the appropriate authority of the respective institutions.

Scope and Activities:

This agreement deals with specific activities, utilisation of facilities, outputs of collaborative research work and exchange of manpower, scientists, holding of workshops, seminars etc.

Present activities at the CEGESS (IIEST) are the following:

CEGESS has established a state-of-the-art facility for fabrication and characterisation of crystalline and thin film silicon solar cells. Following activities are being pursued at present at CEGESS:

i. Development of single crystal solar cells with innovative approaches to enhance the conversion efficiency

ii. Development of material and fabrication technology for single junction amorphous, microcrystalline and tandem solar cells

iii. Development of high efficiency Hetero-junction with intrinsic thin layer (HIT) solar cells

iv. Development of Nanomaterials based 3rd generation (3G) solar cells

v. Application of plasmonics to thin film and crystalline solar cells for the enhancement of efficiency

vi. Development of solar photovoltaic systems of different types including Off-Grid, Grid-Tied PCUs, MPPT chargers, Data-Logging and Remote Monitoring units etc.

vii. Development of Storage Technology for Solar Photo Voltaic (SPV) electricity

viii. Smart Micro-Grid Systems including SPV power plant, Wind Generator, Biomass Generator etc.

ix. Monitoring and modelling of local climatic conditions under SRRA programme of MNRE

x. Development of High Sensitivity High Selectivity Sensors using Metal-Oxide Semiconductors and their alloys, Graphene, CNT etc., as well as MEMS micro-heaters

xi. Development of manpower through M.Tech course in Renewable Energy Science and Technology and other training programmes in collaboration with Govt. Organisations like MNRE, National Institute of Solar Energy (NISE).

Present Activities at HITK are the following:

i. Roof-top SPV panels of 100 kW peak are being studied by the relevant members of faculty and students

ii. Research activities in the form of institute-funded students' projects for both green energy applications and energy saving systems

iii. Few Nationally important projects funded by DST and AICTE are in progress

iv. Organising workshops, special lectures and seminars in the area of Green Energy

v. M.Tech Projects on Renewable Energy and other fields

vi. Promoter of the institute is the manufacturer of SPV panels.

The following areas have been identified as possible starting points of the partnership. The area of cooperation can further be enhanced by mutual consent.

i) **Research students, Staff training and exchange programme:** HITK may depute research/post graduate students, members of faculty and staff for specific purposes to IIEST. This includes students/ staff of the funded projects by DST or AICTE/ DBT, MNRE etc., or any other agencies. Funds for utilising the advanced facilities of CEGESS in the implementation of the projects or otherwise will be earmarked from the sanctioned projects, if such projects are done in collaboration between HITK and CEGESS, IIEST. CEGESS, IIEST will extend all its facilities and guidance to HITK for training and individual research activities of the members of faculty, students, research staff of the projects and/or M. Tech students deputed to CEGESS using the CEGESS laboratory facilities during the suitable period as agreed mutually and the cost of actual consumables for such research and training will be borne by HITK on case to case basis.

Besides the above, members of faculty and experts of CEGESS, IIEST, Shibpur would visit HITK periodically to train various groups of members of faculty and research workers of HITK on the renewable energy harvesting techniques and procedures.

CEGESS, IIEST, Shibpur will also extend help in setting up a dedicated energy laboratory for the R & D work on renewable energy in HITK.

CEGESS, IIEST, Shibpur will also provide necessary help, assistance and support in development of curriculum and syllabi for an M.Tech Course on Renewable Energy & Energy Audit in HITK.

ii) **Cooperative Research Projects:** The two institutions will define joint collaborative research projects between members of faculty and/ or research groups. Collaborating members of faculty will approach various funding agencies to submit joint project proposals. Focus will be on Industry-funded projects and those funded by International agencies. Depending on the nature of collaboration, output should be published jointly in the form of IPR/publication in journals/presentation in the conference.

iii) **Utilisation of mutual facilities at IIEST and HITK:**

IIEST has established state-of-the–art facilities for fabrication and characterisation of crystalline and amorphous silicon solar cells and their efficiency enhancements through nanoparticles and nanostructure. These facilities will be further extended to include R & D activities on other types of solar cell such as organic/inorganic solar cells etc. These facilities will be utilised by different other joint projects of the two institutions under mutually agreed terms. HITK with its potential academic resources in the form of members of faculty and students has established a sound academic and research environment in the institute in different inter-disciplinary fields of research involving Computer Science & Engineering, Electronics and Communication Engineering, Applied Electronics and Instrumentation Engineering, Chemical Engineering, Biotechnology, Mechanical, Electrical and Civil Engineering Departments. In the field of photovoltaic system, HITK have one 100 kW peak roof top Photo Voltaic (PV) system and the activity of research in this field is in place by the research faculty of ECE and Chemical Engineering of HITK, which may be shared by the researchers of the two institutes after receiving due approval.

iv) **Workshops and Seminar / Conferences:** Exchange of information, organising Joint workshops/seminars, or interactive sessions/special talks in different areas of renewable Energy Sources will be held at regular intervals on mutually agreed schedules.

3. Intellectual Property:

Each institution will adhere to the intellectual property policy of their respective Institutions. Intellectual property developed during the collaboration will be governed by the rules of the host institute unless otherwise specified by an alternative agreement. The two institutions shall jointly own results of clearly defined collaborative projects and research and students exchange programmes. This joint ownership entitles each party to commercialise and create derivatives independently. Whenever one institution receives any information from the partner under a clearly defined non-disclosure agreement, necessary steps will be taken to protect the intellectual property received. Any proceeds out of the transfer of jointly developed / owned IP will be shared equally.

Validity:

This agreement is valid for an initial period of three years and becomes effective from the date it is signed by the partners. The partnership period may be extended by mutual consent. In case one partner wishes to cancel the contract, intimation will have to be sent by June of that year. In that case, the agreement will terminate at the end of the year i.e., 31st December.

Signed by:

Prof. Kalyan Kumar Bhar
Dean, Research ~~& Consultancy~~ and Development
IIEST, Shibpur

Date: 6.12.2016

In presence of

Prof. Hiranmoy Saha
Chair Professor & Coordinator,
CEGESS, IIEST, Shibpur
Howrah, West Bengal

Signed by:

Prof. Pranay Chaudhuri
Principal, HITK

Date: 6.12.2016

In presence of

Prof. Dulal Chandra Ray
Coordinator, TEQIP-II,
Heritage Institute of Technology
Kolkata

Memorandum of Understanding

Between

New Jersey Institute of Technology (NJIT)

Newark, New Jersey, USA

And

Heritage Institute of Technology (HIT)

Kolkata, West Bengal, India

This Memorandum of Understanding (hereinafter "MOU") is entered into as of the date of the last signature hereto (hereinafter "Effective Date"), by and between the **Heritage Institute of Technology** (hereinafter "HIT"), Chowbaga Road, Kolkata, West Bengal India 700107 and **New Jersey Institute of Technology,** University Heights, Newark, New Jersey U.S.A. 07102 (hereinafter "NJIT"). HIT and NJIT shall be referred to herein individually as a "party" and collectively as the "parties".

PART I: RECITALS

HIT, established in 2001 and managed by Kalyan Bharti Trust, is a private engineering college which has always been ranked among the top engineering colleges in eastern India. HIT offers both undergraduate and graduate engineering courses. All HIT courses are approved by the All India Council for Technical Education (AICTE), Government of India and the Department of Higher Education, Government of West Bengal. HIT also has accreditation from the National Board of Accreditation (NBA) and has been duly granted autonomous status.

Founded in 1881, NJIT is New Jersey's public, technological research university offering 136 bachelors, 41 masters and 19 doctoral degree programs. It is accredited by the Middle States Commission on Higher Education with individual programs carrying additional accreditations (ABET, AACSB, NAAB). NJIT is recognized as a top-tier research university and is among the top university's graduating minority engineers and computer scientists.

PART II: SUMMER RESEARCH PROGRAM

1. The summer research program (hereinafter "Program") will include selected students from HIT and its other Associate Engineering Colleges (hereinafter "students"). Students will participate in a six-week summer learning research experience starting mid-June and continuing until early August each academic year. During such time, students will register at NJIT during the 1st or 2nd Summer Sessions for one independent research course consisting of three (3) credits. The Program will culminate with the students presenting their research work at NJIT's International Summer Research Symposium held at the end of July each academic year.

2. The Program will be divided into three (3) sequential parts. The first part is the first week of the summer research experience during which students will be given a group orientation session about NJIT, its facilities, and the surrounding area. Since most participating students will have just completed their sophomore or junior year at HIT, they will likely have little or no background in various research concepts. Consequently, there will also be introductions to faculty research programs based upon students' discipline and proposed intent.

3. The second Program part will focus on the students' individual research projects. Each student will work with his or her NJIT faculty mentor and the mentor's graduate students on their research projects. Students will attend group meetings involving all participating Program students. At these meetings, the students will discuss the status of their research projects and any problems they have encountered. It is expected that these meetings will foster a sense of community and camaraderie among the participants.

4. Additionally, students will attend workshops which will provide students with non-technical skills needed to perform research, to prepare for the workplace, and to apply to graduate school. Typical topics will include the characteristics of a research proposal, principles of leadership, presentation skills, resume writing and interview skills, graduate admissions, dressing for success, and etiquette. Toward the end of the Program, each student will prepare a final technical report and a poster presentation. A final presentation session will be held at the end of the program at NJIT's International Summer Research Symposium.

5. The third and final part of the Program occurs after the on-campus research experience has concluded. Students can continue to interact with their faculty mentors and the mentors' graduate students, typically via email, subject to mutual consent. Faculty mentors will be encouraged to publish the results of student projects if significant progress was made, either as a stand-alone topic or as part of a more encompassing paper at appropriate conferences or in related journals. It is expected that students will co-author these publications and whenever possible will attend and participate at conferences.

6. In addition to the Program research experiences, students will be exposed to the vast cultural landscape of the United State of America especially, its work culture. Student chaperones will accompany the students to visit New York City and other local cultural centers. NJIT will also guide the students if they plan to visit other out of state locations such as Washington, DC and/or Niagara Falls.

PART III: RECRUITMENT, REGISTRATION AND TUITION

1. HIT will coordinate recruitment and Program participation by all of the students, including those from its other Associated Engineering Colleges. All HIT undergraduate students completing their sophomore or junior year in engineering, computer science, or related degree programs will be preferred to participate in the Program. HIT selected students will possess current, measured academic achievement and a documented desire to undertake serious research. Factors to be considered in the selection process will include: appropriate background courses taken; academic performance; strong commitment to independent research projects; personal reasons for applying to the Program; and self-motivation.

2. HIT and NJIT will mutually make the final determination with respect to the final student count each academic year. Students will meet all NJIT requirements and deadlines pertaining to application for admission and registration. All completed applications and supporting documents should be submitted to NJIT's Admissions Office for timely processing and in order for all visas to be applied for in a timely manner. Students are expected to abide by all

NJIT applicable policies and procedures in effect at the time of their application for admission to NJIT and during their participation in the Program.

3. HIT will guarantee the payment of all agreed upon tuition, fees, room and board and other necessary costs (in U.S. dollars) on behalf of its students and shall pay NJIT the same prior to the students beginning their studies after their arrival at NJIT. Students will also be required to obtain health insurance or show proof of the same before assuming studies at NJIT. The fees are assessed for the students to use the NJIT campus facilities such as the library, computer lab, printing privileges, gym facilities as well as to cover miscellaneous incidental costs. The room and board will include food provided by campus food services and an outside vendor as required and on-campus residence hall living. NJIT prefers that all students stay on campus and participate in the campus food services program. NJIT will have no financial responsibility to provide off-campus room and board to any student.

4. NJIT shall establish an international student development and cultural exchange fund applicable to HIT students to discount their out-of-state tuition rates to amounts comparable to NJIT's in-state tuition amounts. Students shall be individually responsible for: transportation and airfare; visa costs and passport fees; books and supplies; and other necessary living and personal expenses. NJIT shall provide accommodation for one (1) HIT faculty or staff member accompanying the students for the entire Program period each academic year.

5. All students shall be subject to compliance with entry and visa requirements of India and the United States and the requirements of the parties as well. Students may need to provide financial attestation of resources available to them, in accordance with U.S. government requirements, for travel and temporary residency in the U.S., under appropriate student visa status. NJIT makes no promise, representation or guarantee of students obtaining the necessary visa for study in the U.S.

6. HIT agrees that NJIT shall have sole and final authority and oversight with respect to all academic matters regarding NJIT's degree programs, including but not limited to admission and registration processes, tuition and fees (including increases), conferring of degrees and maintenance of all of its own official student records. HIT recognizes that NJIT is bound to

comply with the U.S. Family Educational Rights and Privacy Act of 1974 (Buckley Amendment), as it may be amended from time to time, in the handling of student educational records.

7. All final NJIT academic decisions about the Program shall be made by NJIT, after reasonable consideration of any comments and/or suggestions by HIT, through NJIT administrative process, including review and/or approval as may be required by law, regulation, or by the respective policies of the Board of Trustees of NJIT, including all matters requiring review and/or approval by the New Jersey Secretary of Education and/or NJIT's appropriate accreditation boards (e.g., Middle States Commission on Higher Education).

PART IV: TERM AND TERMINATION

1. This MOU shall continue for seven (7) years from the Effective Date and may be renewed for successive seven (7) year periods upon subsequent signed mutually acceptable agreement.

2. This MOU may be terminated by either party upon three (3) months prior written notice. However, any such termination will not be effective until the end of the summer Program session then in progress and will not adversely impact the students enrolled prior to the termination of this MOU. In the event that this MOU is terminated early, NJIT commits that it shall make a good faith effort to formulate a "teach-out" plan applicable to all then enrolled HIT students.

PART V: CONFIDENTIALITY

1. Both parties will keep confidential all information marked and/or identified as confidential and/or proprietary at the time of disclosure provided by the other party other than to the extent disclosure is required to perform this MOU.

2. "All information" referred to in this Section excludes information: (a) generally available to the public otherwise than by disclosure in breach of the terms of this MOU; (b) known to the receiving party prior to the time of disclosure; (c) lawfully obtained by the receiving party from

a third party; (d) independently developed by or for the receiving party; or (e) required by any law, regulation, subpoena, statute and/or court or administrative order to be disclosed. The terms of this confidentiality Section shall survive expiration and/or termination of this MOU for three (3) years thereafter.

PART VI: GENERAL PROVISIONS

1. Subject to the other party's prior approval, each party will be authorized to use the other party's name and logo on a non-exclusive basis in conjunction with Program brochures, publications, advertisements, letterhead, and material, which make reference to this MOU. Each party agrees to follow any reasonable trademark usage and/or branding guidelines provided by the other party in connection with its exercise of this permitted use.

2. Any notices relating to this MOU should be in writing (which includes facsimile) and shall be sent to the recipient's address set forth above (or at such other addresses as may be stated in notices similarly given) and directed to the Provost and Senior Executive Vice President of NJIT and the concerned executive authority of HIT, with copies to Durga Misra, Ph.D., Professor and Associate Chair for Graduate Studies, Electrical and Computer Engineering Department, NJIT, University Heights, Newark, N.J. 07102.

3. To the extent allowable by applicable law, each party hereby assumes any and all risks of personal injury, property damage and third party claims attributable to the negligent acts or omissions of that party and the officers, employees and agents thereof.

4. The parties have not and did not intend to create any enforceable rights of any third party under this MOU including without limitation the students. This MOU shall not be construed to create a partnership, joint venture or agency relationship between the parties.

5. In the event of a dispute regarding this MOU, the parties shall first attempt to settle it by negotiation within thirty (30) days before any other action is taken. Should consent prove to be unfeasible, the dispute shall be settled by arbitration, in conformity with the Arbitration Rules of the United Nations Committee for International Trade Law (UNCITRAL), such arbitration

to be set up in a timely fashion and in conformity with the rules aforesaid. Construction and/or interpretation of this MOU shall be governed by the laws of the State of New Jersey (U.S.A.), without regard to its conflicts of law principles.

6. Neither party shall have any liability to the other for consequential, exemplary, special, incidental or punitive damages even if advised of the possibility of such damages, including without limitation lost profits and opportunity. Except as otherwise contained herein, each party disclaims all warranties and representations, either express or implied, with respect to its programs and/or any courses or services to be performed by either party hereunder.

7. If the performance of any obligation under this MOU on the part of either party should be prevented or delayed by an event of force majeure beyond its reasonable control, including but not limited to acts of war, revolution, insurrection, terrorism, civil unrest, strikes or work stoppages, fire, flood, earthquake or other natural disaster, then the affected party's duty to perform its obligations under this MOU shall be excused as reasonably required or justified by the circumstances.

8. In the performance of this MOU, the parties will not discriminate against any student or person involved with the Program on the basis of race, gender, age, marital status, familial status, religion, affectional or sexual orientation, creed, national origin or ancestry, disability. HIT recognizes that NJIT shall perform all activities required under this MOU in accordance with all applicable U.S. federal and state laws, rules, and requirements, as these requirements may be amended from time-to-time, including but not limited to: (a) U.S. Export Control Act and U.S. Export Administration Regulations; (b) U.S. Foreign Corrupt Practices Act; and (c) U.S. Anti-Boycott laws and regulations.

9. This MOU contains the entire understandings between the parties. This MOU shall not be varied in any way except with the written agreement of both parties. This MOU may not be assigned or delegated by either party.

[Signatures on following page]

The following parties have executed this MOU as of the dates set forth below.

Signature

Dr. Atam Dhawan
Vice Provost for Research and
Executive Director of Undergraduate Research
And Innovation
Name

For: **New Jersey Institute of Technology**
United States

Dated: 30 July 2014

Signature

Prof (Dr.) Pranay Chaudhuri
Principal

Name

For: **Heritage Institute of Technology**
India

Dated: 13.8.2014

3.7.1.1:Total number of Collaborative activities per year for research/ faculty exchange/ student exchange/ internship/ on –the-job training/ project work

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity
1	Industry Internship Summer Training	e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Ritwick Bakshi, Subhanjan, Shubhanshu Kumar, Anurima Mallick, Sayani Chatterjee, Rajatava KarChoudhury, Arin Saha, Tanay Gautam	2020-2021	Sep 16, 2021 to Oct 16, 2021	Internship Industry Summer Training: One Month Industry Training on VLSI by eCOE. Students did the training in Virtual Mode (Online).
2	Internship Industry Winter Training	e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Swagata Banerjee, Aniket Hait, Divyesh Kumar, shashank sonal, Ashish Narayan, Soumya Biswas, Santanu Ghosh, Satyam Banerjee, Rajatabha Chakraborty	2020-2021	Dec 2020 to Jan 2021	Internship Industry Winter Training: One Month Industry Training on VLSI by eCOE. Students did the training in Virtual Mode (Online).
3	Internship Work	VVDN Technologies (Industry Partner of e-COE, Electronic Center of Excellence), Dr. Ajit Kumar Panda 9437014147	Arijit Das, Ankur Kumar	2020-2021	Jul 2020 to Sep 2020	Internship work: Online Internship in 5G Domain working with VVDN Center in Bhubaneswar
4	Industry Project	HCL Technologies Ltd (Sankalp Semiconductor), Mr. Priyanko Mitra 9903775307	Shuvam Podder, Prof. Krishanu Datta	2020-2021	Dec 2020 to Jul 2021	Industry Project: LVCMOS18 GPIO TRANSMITTER DESIGN using 45nm Process Node. The Project was executed in HITK ECE VLSI LAB. Industry Mentors interacted in online/virtual mode.
5	Internship Work	HCL Technologies Ltd (Sankalp Semiconductor), Mr. Priyanko Mitra 9903775307	Shuvam Podder	2020-2021	Dec 2020 to Jul 2021	Internship Work: As part of Internship work, an Industry Project was executed on LVCMOS18 GPIO TRANSMITTER DESIGN using 45nm Process Node. This Internship Industry Project was executed in HITK ECE VLSI LAB. Industry Mentors interacted in online/virtual mode.
6	Industry Project	HCL Technologies Ltd (Sankalp Semiconductor), Mr. Priyanko Mitra 9903775307	Sagar Kumar Lo, Prof. Krishanu Datta	2020-2021	Dec 2020 to Jul 2021	Industry Project: Design and Implementation of Analog Front End using advanced process node. The Project was executed in HITK ECE VLSI LAB. Industry Mentors interacted in online/virtual mode.
7	Internship Work	HCL Technologies Ltd (Sankalp Semiconductor), Mr. Priyanko Mitra 9903775307	Sagar Kumar Lo, Prof. Krishanu Datta	2020-2021	Dec 2020 to Jul 2021	Internship Work: As a part of this Internship Work, an Industry Project was executed on Design and Implementation of Analog Front End using advanced process node. This Internship Project Project was executed in HITK ECE VLSI LAB. Industry Mentors interacted in online/virtual mode.
8	Industry Project	HCL Technologies Ltd (Sankalp Semiconductor), Mr. Priyanko Mitra 9903775307	Sandipan Dey, Prof. Krishanu Datta	2020-2021	Dec 2020 to Jul 2021	Industry Project: DESIGN OF LOW DROPOUT VOLTAGE REGULATOR WITH 2A LOAD CAPACITY (POWER MANAGEMENT DOMAIN) using advanced process node. The Project was executed in HITK ECE VLSI LAB. Industry Mentors interacted in online/virtual mode.
9	Internship Work	HCL Technologies Ltd (Sankalp Semiconductor), Mr. Priyanko Mitra 9903775307	Sandipan Dey	2020-2021	Dec 2020 to Jul 2021	Internship Work: As part of this Internship, an Industry Project was executed on DESIGN OF LOW DROPOUT VOLTAGE REGULATOR WITH 2A LOAD CAPACITY (POWER MANAGEMENT DOMAIN) using advanced process node. This Internship Industry Project was executed in HITK ECE VLSI LAB. Industry Mentors interacted in online/virtual mode.
10	Industry Project	HCL Technologies Ltd (Sankalp Semiconductor), Mr. Priyanko Mitra 9903775307	Abhishek Roy, Prof. Krishanu Datta	2020-2021	Dec 2020 to Jul 2021	Industry Project: LVCMOS18 IO RECEIVER DESIGN using 45nm process node. The Project was executed in HITK ECE VLSI LAB. Industry Mentors interacted in online/virtual mode.
11	Internship Work	HCL Technologies Ltd (Sankalp Semiconductor), Mr. Priyanko Mitra 9903775307	Abhishek Roy	2020-2021	Dec 2020 to Jul 2021	Internship Work: As a part of Internship Work, an Industry Project was executed on LVCMOS18 IO RECEIVER DESIGN using 45nm process node. This Internship Project was executed in HITK ECE VLSI LAB. Industry Mentors interacted in online/virtual mode.
12	Industry Project	VVDN Technologies (Industry Partner of e-COE, Electronic Center of Excellence), Dr. Ajit Kumar Panda 9437014147	Arpan Das, Prof. Krishanu Datta	2020-2021	Jan 2021 to Jun 2021	Industry Project: RF CONFORMANCE TEST OF GARUDA BAND n78. The Project was executed in VVDN Center, Bhubaneswar
13	Internship Work	VVDN Technologies (Industry Partner of e-COE, Electronic Center of Excellence), Dr. Ajit Kumar Panda 9437014147	Arpan Das	2020-2021	Jan 2021 to Jun 2021	Internship Work: As part of Internship work, an Industry Project was executed on RF CONFORMANCE TEST OF GARUDA BAND n78. This Internship Project was executed in VVDN Center, Bhubaneswar

14	International Workshop on Emergency Response technologies and services	IIM Calcutta Missouri University of Science and Technology, USA, University of Kentucky, USA IIEST Shibpur Prof. (Dr.) Sajal K Das, Missouri University of Science and Technology, USA, sdas@mst.edu Prof. (Dr.) Simone Silvestri, University of Kentucky, USA, silvestri@cs.uky.edu Prof. (Dr.) Somprakash Bandyopadhyay, Indian Institute of Management Calcutta, India, somprakashb@gmail.com Prof. (Dr.) Sipra Das Bit, Indian Institute of Engineering Science & Technology, Shibpur, sdasbit@yahoo.co.in	Prof. Souvik Basu	2020-2021	Jan 5, 2021 to Jan 9, 2021	Workshop Organization
15	Using Blockchain in intermittently Connected Network Environments	IIEST Shibpur Prof. (Dr.) Sipra Das Bit, Indian Institute of Engineering Science & Technology, Shibpur, sdasbit@yahoo.co.in	Prof. Souvik Basu	2020-2021	Jan 2021 to Jul 2021	Joint Publications
16	Industry Project	e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Madhurima Mukherjee, Prof. Krishanu Datta	2020-2021	Jan 2020 to Jul 2020	Industry Project: Development of PHYSICAL DESIGN OF 10-BIT SAR LOGIC USING 65nm TSMC SUB-MICRON TECHNOLOGY. The Project was executed in eCOE Bhubaneswar Center.
17	Internship Work	e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Madhurima Mukherjee	2020-2021	Jan 2020 to July 2020	Internship Work: As part of Internship, an Industry Project was executed on Development of PHYSICAL DESIGN OF 10-BIT SAR LOGIC USING 65nm TSMC SUB-MICRON TECHNOLOGY. The Internship Project was executed in eCOE Bhubaneswar Center.
18	Hand held Equipment to detect Glaucoma and Diabetic Retinopathy from retinal Color Fundus Images.	C-DAC, Kolkata, Dr. Subrata Sarkar, Ph.D., Principal Engineer, Mobile 9433111038	Prof. Anindya Sen	2019-2020	Ongoing	Development of an Hand held Equipment to detect Glaucoma and Diabetic Retinopathy from retinal Color Fundus Images.
19	Colour strips used for the detection of AIDS using AIDS meter and image processing technology	C-DAC, Kolkata, Dr. Souvik Pal, Research Scientist, Mobile 9405138180	Mr. Sourav Goswami	2019-2020	Ongoing	Colour strips that were used for the detection of AIDS using AIDS meter were processed with image processing technology for a unique code and then finally make a device.
20	Industry Project	Sankalp Semiconductor (HCL Technologies), Mr. Priyanko Mitra 9903775307	Sohom Das, Anik Sengupta, Prof. Krishanu Datta	2019-2020	Aug 2019 to May 2020	Industry Project as executed in ECE VLSI Lab. The Industry Project is on Design of Analog Front end for 10 Gbps SERDES Receiver [using 45nm Node]
21	Internship Work	Sankalp Semiconductor (HCL Technologies), Mr. Priyanko Mitra 9903775307	Sohom Das, Anik Sengupta	2019-2020	Aug 2019 to May 2020	Industry Internship as executed in ECE VLSI Lab. As part of Internship, students did Industry Project on Design of Analog Front end for 10 Gbps SERDES Receiver [using 45nm Node]
22	Internship Industry Winter Training	e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Abinash Kumar Bharati, Subhadeep Mandal, Ankit Singh, Granthana Maulik, Sagar Kumar Lo, Arpan Das, Swapnanil Das, Anirban Paul, Shuvam Poddar, Anil Kumar, Dhritikana Das, Ankita Das, Debmalya Majumder, Tirtharaj Bhadra	2019-2020	Dec 2019 to Jan 2020	Internship Industry Winter Training: One Month Industry Training on VLSI by eCOE. Students did the training in eCOE Bhubaneswar.
23	Industry Boot Camp to prepare Shortlisted Students for Core VLSI Industry	Sankalp Semiconductor and eCOE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Chandan Kumar, Akash Roy, Prajjol Kumar Mitra, Shubhang Pandey, Anuj Kumar , Subhajit Mondal, Kunal Baksi, Swarnil Kundu, Manisha Kumari, Sawan Kumar, Sohom Ghatak, Keshav Kumar, D Kushal, Abhinav Anand	2019-2020	Dec 2019 to Jan 2020	One Month Industry Training was provided to 14 Shortlisted Students by Industry Experts from Sankalp Semiconductor and eCOE (Electronics Center of Excellence) in ECE VLSI LAB as coordinated by Prof. Krishanu Datta, Associate Professor from ECE Department. Idea was to prepare these shortlisted students for final Interview by Sankalp Semiconductor. This was an excellent collaborative effort by Multiple Organizations. 8 Students from 14 Shortlisted students got Job Offer from Sankalp Semiconductor as outcome of this collaborative training.
24	Internship Industry Summer Training	e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Uditanshu Bhattacharya, Bhaskar Debnath, Bidisha Pal, Reebhu Goswami, Pradeepto Addya, Soham Bhattacharya, Sandipan Dey, Ritaban Datta, Souhadri Das, Sankalpa Mukherjee, Abhishek Roy, Debadrita Das	2019-2020	May 2020 to Jun 2020	Internship Industry Summer Training: One Month Industry Training on VLSI by eCOE. Students did the training in Virtual Mode (Online).

25	International Workshop on Emergency Response Technologies and Services	IIM Calcutta Missouri University of Science and Technology, USA, University of Kentucky, USA, IIEST Shibpur Prof. (Dr.) Sajal K Das, Missouri University of Science and Technology, USA, sdas@mst.edu Prof. (Dr.) Simone Silvestri, University of Kentucky, USA, silvestri@cs.uky.edu Prof. (Dr.) Somprakash Bandyopadhyay, Indian Institute of Management Calcutta, India, somprakashb@gmail.com Prof. (Dr.) Sipra Das Bit, Indian Institute of Engineering Science & Technology, Shibpur, sdasbit@yahoo.co.in	Prof. Souvik Basu	2019-2020	Jan 7, 2020 to Jan 11, 2020	Workshop Organization
26	CNN Based Approach for Post Disaster Damage Assessment	IIEST Shibpur Prof. (Dr.) Sipra Das Bit, Indian Institute of Engineering Science & Technology, Shibpur, sdasbit@yahoo.co.in	Prof. Souvik Basu	2019-2020	Jan 2020 to Dec 2020	Joint Publications
27	Efficient Dropbox Deployment toward Improving Post-Disaster Information exchange in a Smart City	IIEST Shibpur Prof. (Dr.) Sipra Das Bit, Indian Institute of Engineering Science & Technology, Shibpur, sdasbit@yahoo.co.in	Prof. Souvik Basu	2019-2020	Jan 2020 to Dec 2020	Joint Publications
28	Student Exchange Programme	New Jersey Institute of Technology (NJIT), University Heights Newark, New Jersey 07102, Main phone (973) 596-3000	Ishita Bardhan	2019-2020	6 weeks	Summer Research Programme
29	Student Exchange Programme	New Jersey Institute of Technology (NJIT), University Heights Newark, New Jersey 07102, Main phone (973) 596-3000	Michael Qi Yin Chen	2019-2020	6 weeks	Summer Research Programme
30	Internship (summer training) of U.G. student	Haldia Petrochemicals Limited	Umme Habiba	2019-2020	June 24, 2019 to Jul 19, 2019	Internship (summer training) of U.G. student
31	Collaborative project work: Study on Electro catalyst Performance for Alkaline Fuel Cell	Chemistry Dept., Heritage Institute of Technology, Kolkata	Prof. Avijit Ghosh	2019-2020	1 year	Project work
32	Collaborative project work: Screening on Modified TIO2 based dye-sensitized Solar Cells (DSSC)	Chemistry Dept., Heritage Institute of Technology, Kolkata	Prof. Avijit Ghosh	2019-2020	1 year	Project work
33	Industrial Training for Faculty member in collaboration with Company	Amit Kanabar Technical Training - HRD Macleods Pharmaceuticals Ltd. Head - Macleods Centre of Excellence, Sarigam M: 7574881055; E-mail: amitk@macleodspharma.com	Prof. Abhyuday Mallick	2019-2020	Aug 31, 2019 to Sep 28, 2019	1) Hands on training on API production with exposure to GMP, cGMP, GLP, GDP, 2) Training sessions on Virtual Reality modules, 3) Actual operation of an industrial reactor in a Pharmaceutical plant, 4) Feedback on training modules used at the plant, 5) Training session conducted on Distillation for the trainees at the plant
34	Research Collaboration: Product Development	eCOE (Electronic Center of Excellence), Bhubaneswar, Mr. Mrinal Das: 7381974602	Prajjol Kumar Mirta, Subhajit Mondal, Shubhang Pandey, Sounak De, Priyankar Sarkar, Shivendra Narayan Sinha, Riju Mukherjee, Nikita Paul, Project Lead: Prof. Krishanu Datta	2018-2019	Jul 2018 to Jun 2019	Research Collaboration: Product Development: 32Kb Physical Memory IP was developed using 65nm Process Node to be used in SOC Chip for IoT Application for smart sensing at edge/fog computing in Indian Environment for real time Water Monitoring System as part of India Chip Program
35	Industry Project	e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Prajjol Kumar Mitra, Riju Mukherjee, Shibendra Narayan Sinha, Shubhang Pandey, Prof. Krishanu Datta	2018-2019	Jul 2018 to Jun 2019	Industry Project: Research and Development of Low Power High Performance 32Kb SRAM Array Design using 45nm GPDK and 65nm TSMC Process Node. This Project was part of India Chip Program in collaboration with eCOE. During 1st Phase, the Project was executed in HITK ECE VLSI LAB. In 2nd Phase, the project was executed in eCOE LAB in Bhubaneswar.
36	Internship Work	e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Prajjol Kumar Mitra, Riju Mukherjee, Shibendra Narayan Sinha, Shubhang Pandey	2018-2019	Jul 2018 to Jun 2019	Internship Work: As part of Internship, an Industry Project was executed on Low Power High Performance 32Kb SRAM Array Design using 45nm GPDK and 65nm TSMC Process Node. This Internship Project was part of India Chip Program in collaboration with eCOE. During 1st Phase, the Internship Project was executed in HITK ECE VLSI LAB. In 2nd Phase, the Internship project was executed in eCOE LAB in Bhubaneswar.

37	Industry Project	e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Subhajit Mondal, Sounak De, Priyankar Sarkar, Prof. Krishanu Datta	2018-2019	Jul 2018 to Jun 2019	Industry Project: Research and Development on 6T SRAM Bit-cell Characterization and 32 Kb Physical Array Design of 6T using 45 nm GPDK and 65 nm TSMC Process. This Project was part of India Chip Program in collaboration with eCOE. During 1st Phase, the Project was executed in HITK ECE VLSI LAB. In 2nd Phase, the project was executed in eCOE LAB in Bhubaneswar.
38	Internship Work	e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Subhajit Mondal, Sounak De, Priyankar Sarkar,	2018-2019	Jul 2018 to Jun 2019	Internship Work: As pert of Internship, an Industry Project was executed on 6T SRAM Bit-cell Characterization and 32 Kb Physical Array Design of 6T using 45 nm GPDK and 65 nm TSMC Process. This Internship Project was part of India Chip Program in collaboration with eCOE. During 1st Phase, the Internship Project was executed in HITK ECE VLSI LAB. In 2nd Phase, the Internship project was executed in eCOE LAB in Bhubaneswar.
39	Industry Project	Sankalp Semiconductor (HCL Technologies) and e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Abhinav Anand, Anuj Kumar, Chandan Kumar, Gaurav Nandan, Prof. Debamita Roy, Prof. Krishanu Datta	2018-2019	Aug 2018 to Jun 2019	Industry Project: Development of INDUSTRY STANDARD BANDGAP REFERENCE VOLTAGE REGULATOR using 180nm Process Node. The project was executed in HITK ECE VLSI LAB.
40	Internship Work	Sankalp Semiconductor (HCL Technologies) and e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Abhinav Anand, Anuj Kumar, Chandan Kumar, Gaurav Nandan,	2018-2019	Aug 2018 to Jun 2019	Internship Work: As part of Internship, an Industry Project was executed on Development of INDUSTRY STANDARD BANDGAP REFERENCE VOLTAGE REGULATOR using 180nm Process Node. The Internship project was executed in HITK ECE VLSI LAB.
41	Industry Project	e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Nikita Paul, Prof. Krishanu Datta	2018-2019	Oct 2018 to May 2019	Industry Project: VLSI Physical Layout Design of SRAM Bit-cell and Array [using 65nm TSMC Process Node]. The Project was executed in eCOE Bhubaneswar.
42	Internship Work	e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Nikita Paul	2018-2019	Oct 2018 to May 2019	Internship Work: As part of Internship, an Industry Project was executed on VLSI Physical Layout Design of SRAM Bit-cell and Array [using 65nm TSMC Process Node]. This Internship Project was executed in eCOE Bhubaneswar.
43	Internship Industry Winter Training	e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Anik Sen Gupta, Rishav Sen, Meghna Misra, Ankur Kumar, Subha Roy, Krishna Kr.Samanta, Satish Kumar, Shivam Acharya, Anindita Mondal, Arvind Kumar, Abhishek Ranjan, Rahul Kumar, Madhurima Mukherjee, Gaurav Kumar, Mrinmoyi Manna, Ishita Chakraborty	2018-2019	Dec 2018 to Jan 2019	Internship Industry Winter Training: One Month Industry Training on VLSI by eCOE. Students did the training in eCOE Bhubaneswar.
44	Internship Industry Summer Training	e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Debmalya Majumder, Debsnigdha Sinha Roy, Keshav Agarwal, Rahul Dutta, Tirtharaj Bhadra, Madhurima Mukherjee	2018-2019	Jun 2019	Internship Industry Summer Training: One Month Industry Training on VLSI by eCOE. Students did the training in eCOE Bhubaneswar.
45	International Workshop on Emergency Response Technologies and services	IIM Calcutta Missouri University of Science and Technology, USA, University of Kentucky, USA, IIEST Shibpur Prof. (Dr.) Sajal K Das, Missouri University of Science and Technology, USA, sdas@mst.edu Prof. (Dr.) Simone Silvestri, University of Kentucky, USA, silvestri@cs.uky.edu Prof. (Dr.) Somprakash Bandyopadhyay, Indian Institute of Management Calcutta, India, somprakashb@gmail.com Prof. (Dr.) Sipra Das Bit, Indian Institute of Engineering Science & Technology, Shibpur, sdasbit@yahoo.co.in	Prof. Souvik Basu	2018-2019	Jan 7, 2019 to Jan 11, 2019	Workshop Organization
46	Reliable Post Disaster Services over Smartphone Based DTN	IIEST Shibpur Prof. (Dr.) Sipra Das Bit, Indian Institute of Engineering Science & Technology, Shibpur, sdasbit@yahoo.co.in	Prof. Souvik Basu	2018-2019	Jan 2019 to Dec 2019	Joint Publications

47	A Blockchain Based Incentive Scheme for Post Disaster Opportunistic Communication over DTN	Narula Institute of Technology, Kolkata, India Chandrima Chakrabarti Department of Computer Science and Engineering Narula Institute of Technology, Kolkata, India chandrima.narula@gmail.com	Prof. Souvik Basu	2018-2019	Jan 2019 to Dec 2019	Joint Publications
48	Student Exchange Programme	New Jersey Institute of Technology (NJIT), University Heights Newark, New Jersey 07102, Main phone (973) 596-3000	Sambo Dutta	2018-2019	6 weeks	Summer Research Programme
49	Student Exchange Programme	New Jersey Institute of Technology (NJIT), University Heights Newark, New Jersey 07102, Main phone (973) 596-3000	Soumita Das	2018-2019	6 weeks	Summer Research Programme
50	Student Exchange Programme	New Jersey Institute of Technology (NJIT), University Heights Newark, New Jersey 07102, Main phone (973) 596-3000	Abhishek Agarwal	2018-2019	6 weeks	Summer Research Programme
51	Industry Project	DXCorr Hardware Technologies Pvt Ltd, Mr. Vikram Venkatesan 99459 27321	Tanisha Fouzdar, Taha Khursheed, Satyanand Rukhaiyar, Shauvik Das, Prof. Krishanu Datta	2017-2018	Aug 2017 to May 2018	Industry Project: Design prototype development on VLSI CAM Memory using 45nm Process Node
52	Industry Project	DXCorr Hardware Technologies Pvt Ltd, Mr. Vikram Venkatesan 99459 27321	Mainak Tarafdar, Srijani Pal, Ayantika Das, Aditya Sikhwal, Prof. Krishanu Datta	2017-2018	Aug 2017 to May 2018	Industry Project: Design prototype development on VLSI 6T SRAM Memory Array using 45nm Process Node
53	Internship Industry Summer Training	e-COE (Electronics Center of Excellence), Bhubaneswar, Mr. Mrinal Das 7381974602	Milan Pramanik, Prajjol Kumar Mitra, Akash Roy, Shubhang Pandey, Bapi Saradar, Nikita Paul, Gouri Shankar Roy, Rupayan Das, Barnali Saha, Moumita Majumder, Gaurav Nandan, Abhinav Anand, Vishal Kumar, Paban Santra, Anuj Kumar , Chandan Kumar	2017-2018	Jun 2018	Internship Industry Summer Training: One Month Industry Training on VLSI by eCOE. Students did the training in eCOE Bhubaneswar.
54	Hm 2 SC:Human Movement Model for Post Disaster Scenario in Smart City	IIEST Shibpur Prof. (Dr.) Sipra Das Bit, Indian Institute of Engineering Science & Technology, Shibpur, sdasbit@yahoo.co.in	Prof. Souvik Basu	2017-2018	Jan 2018 to Nov 2018	Joint Publication
55	Wise-PRoPHET : A Watchdog supervised PRoPHET for reliable dissemination of post disaster situational information over smartphone based DTN	IIEST Shibpur Prof. (Dr.) Sipra Das Bit, Indian Institute of Engineering Science & Technology, Shibpur, sdasbit@yahoo.co.in	Prof. Souvik Basu	2017-2018	Jan 2018 to Dec 2018	Joint Publication
56	A Post-Disaster Demand Forecasting System Using Principal Component Regression Analysis and Case--Based Reasoning over Smartphone- Based DTN	IIEST Shibpur Prof. (Dr.) Sipra Das Bit, Indian Institute of Engineering Science & Technology, Shibpur, sdasbit@yahoo.co.in	Prof. Souvik Basu	2017-2018	Jan 2018 to Dec 2018	Joint Publication
57	A Unity Driven Posst Disaster Emergency Resource Allocation System Using DTN	IIEST Shibpur IIM Calcutta Prof. (Dr.) Somprakash Bandyopadhyay, Indian Institute of Management Calcutta, India, somprakashb@gmail.com Prof. (Dr.) Sipra Das Bit, Indian Institute of Engineering Science & Technology, Shibpur, sdasbit@yahoo.co.in	Prof. Souvik Basu	2017-2018	Jan 2018 to Dec 2018	Joint Publication
58	Student Exchange Programme	New Jersey Institute of Technology (NJIT), University Heights Newark, New Jersey 07102, Main phone (973) 596-3000	Jasleen Sekhon	2017-2018	6 weeks	Summer Research Programme
59	Student Exchange Programme	New Jersey Institute of Technology (NJIT), University Heights Newark, New Jersey 07102, Main phone (973) 596-3000	Anisha Gupta	2017-2018	6 weeks	Summer Research Programme
60	Best-effort Delivery of Emergency Messages in Post-disaster Scenario with Content-based Filtering and Priority-enhanced PRoPHET over DTN	IIEST Shibpur Prof. (Dr.) Sipra Das Bit, Indian Institute of Engineering Science & Technology, Shibpur, sdasbit@yahoo.co.in	Prof. Souvik Basu	2016-2017	Jan 2, 2016 to Dec 20, 2016	Joint Publication
61	A Human Mobility Based Knowledge Sharing Approach for Post Disaster Need Assessment using DTN	IIEST Shibpur IIM Calcutta Prof. (Dr.) Somprakash Bandyopadhyay, Indian Institute of Management Calcutta, India, somprakashb@gmail.com Prof. (Dr.) Sipra Das Bit, Indian Institute of Engineering Science & Technology, Shibpur, sdasbit@yahoo.co.in Siuli Roy Heritage Institute of Technology Kolkata, INDIA siuli.roy@heritageit.edu	Prof. Souvik Basu	2016-2017	Jan 2016 to Dec 2016	Joint Publication

62	Student Exchange	New Jersey Institute of Technology (NJIT), University Heights Newark, New Jersey 07102, Main phone (973) 596-3000	Akanksha Mukherjee	2016-2017	6 weeks	Summer Research Programme
63	Student Exchange Programme	New Jersey Institute of Technology (NJIT), University Heights Newark, New Jersey 07102, Main phone (973) 596-3000	Ayushi Churiwala	2016-2017	6 weeks	Summer Research Programme
64	Student Exchange Programme	New Jersey Institute of Technology (NJIT), University Heights Newark, New Jersey 07102, Main phone (973) 596-3000	Susnata Mandal	2016-2017	6 weeks	Summer Research Programme
65	Student Exchange Programme	New Jersey Institute of Technology (NJIT), University Heights Newark, New Jersey 07102, Main phone (973) 596-3000	Aman Singhania	2016-2017	6 weeks	Summer Research Programme
66	Student Exchange Programme	New Jersey Institute of Technology (NJIT), University Heights Newark, New Jersey 07102, Main phone (973) 596-3000	Arkoprovo Dey	2016-2017	6 weeks	Summer Research Programme
67	Research Collaboration	NIT Agartala	Prof. Dwaipayan Sen	2016-2017	2016-2019	Jointly supervising doctoral students with other University
68	Research Collaboration	Jadavpur University (Chemica Engg. Deptt.)	Prof. Dwaipayan Sen	2016-2017	2016-2019	Jointly supervising doctoral students with other University
69	Project Collaboration	Jadavpur University (Chemical Engineering)	Prof. Dwaipayan Sen	2016-2017	2016-2019	Project Work