INSPIRE 2023

AEIE DEPARTMENTAL MAGAZINE

THEINSPIRE2020@GMAIL.COM

HALDIA INSTITUTE OF TECHNOLOGY
KSHUDIRAM NAGAR,HALDIA,PURBA
MEDINICUR,WEST BENGAL,721657

HALDIA INSTITUTE OF TECHNOLOGY

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MAGAZINE CORE MEMBER

Ravi Kumar

Suvadip Mondal

Shibabrata Mondal

Ruchika Kumari

Utaam Manna

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FROM THE DESK OF

PRINCIPAL, HIT

I am happy to know that the Department of Applied Electronics and Instrumentation Engineering is going to publish its annual technical magazine **"INSPIRE"** in **2023.** It is well known that knowledge is such a thing that gets perfection only by expressing and sharing with others. Swami Vivekananda believed education is the manifestation of perfection already in men. So, it has lot of other features besides conventional classroom teaching. Even we put efforts to impart education to match the advancement of technology; it would not be effective if it is not complimented with something where the thoughts of our young generation are reflected.

Technical magazine can play a major role to culture our thoughts and views towards its perfection. **"INSPIRE"** has many features which will in still many good qualities not only in our young generation but also in all of us involved in this activity. It will try to inculcate creativity, innovation and confidence on all of them. This magazine is a milestone that marks our growth, unfolds our imaginations, and gives life to our thoughts and aspirations. It unleashes a wide spectrum of creative skills ranging from writing to editing and even in designing the magazine. So, it is almost like dreams to get the magazine publish.

I congratulate the entire team of "INSPIRE" and the contributing authors for their hard work and dedication in making this dream into reality.

PROF.(Dr.) Subrata Mondal

PRINCIPAL,

HALDIA INSTITUTE OF TECHNOLOGY

FROM THE DESK OF

DEAN, HIT

It is a matter of great pleasure and satisfaction to know that the department of Applied Electronics and Instrumentation Engineering, Haldia Institute of Technology has taken the appropriate initiatives to publish the Technical Magazine, **INSPIRE-2023.** The magazine is poised to encapsulate the contributions by the faculty members, and the students of the department in terms of projects, working models and innovative products developed, research papers published, seminars/workshops/PDP organized, and different other co- curricular and extra-curricular activities.

The publication of such magazine is very much appropriate in the context of today's highly volatile and tumultuous professional world to remain competitive and market one's unique selling point. Additionally, such an attempt will bolster team work and encourage innovative thinking in different areas of technical education. The proposed magazine will definitely consolidate the credentials of the department and augment its reputation.

I appreciate the initiative taken by the department and congratulate all the members associated with the department. I wish all success in this endeavour.

PROF. T.K. JANA

DEAN-SCHOOL OF ENGINNEERING,

HALDIA INSTITUTE OF TECHNOLOGY

FROM THE DESK OF

DEAN, HIT

I am extremely delighted that the Department of Applied Electronics & Instrumentation Engineering, Haldia Institute of Technology is going to publish its Techno-Cultural Magazine **'INSPIRE - 2023**', covering wide aspects of technological developments/ challenges as well as latest happening of the department.

In general, the platform of this Techno-Culture Magazine always offers strong connectivity for sharing of new and emerging technological information / ideas; developments of creative avenues of future-technologists through engineering product development / analysis, photography, literature, etc.

The practice of sharing of information through such magazine will redefine relationships at all levels of society including between teachers and students resulting with the enhancement of creativity and innovation in science education and technological design.

In this auspicious moment, I would like to congratulate all the members of the 'INSPIRE'- the **Techno-Cultural Magazine of Applied Electronics** & **Instrumentation Engineering department** for their heart-full efforts to bring-out such novel concept.

PROF. A.B. MAITY

DEAN-SCHOOL OF APPLIED SCIENCE,

HALDIA INSTITUTE OF TECHNOLOGY

FROM THE DESK OF

HOD, HIT

A very warm congratulation to the magazine editorial committee and associated students and faculty members for successfully publishing this issue of departmental technical magazine cum newsletter **"INSPIRE-2023"** through extensive collective efforts and adequate guidance. **INSPIRE** has proven to be a cloud of information which inspires and instils confidence to the entire AEIE fraternity to express their original thoughts on technical topics. The magazine plays an instrumental role in providing exposure to the students to develop written communication skills and command over the language. It is a step towards building professional attitude in them.

The entire journey of creating **INSPIRE** inculcates leadership qualities, ethical attitude and social sensitivity among the students. This issue of **INSPIRE** has well covered topics like reading and evaluating technical papers which is the first step towards research and development. It also talks about career options available to them after graduation. Most importantly it focuses on the student achievements in the current academic year.

The magazine is beaming with enthusiasm and creative ideas giving it a fresh and grand look. On a concluding note, I would like to wish you all the very best for more such initiatives and future endeavours.

DR. UDAY MAJI

PROFESSOR & H.O.D, AEIE

HALDIA INSTITUTE OF TECHNOLOGY

OVERVIEW OF THE DEPARTMENT

DEPARTMENT OF APPLIED ELECTRONICS & INSTRUMENTATION ENGINEERING

[NBA ACCREDITED]

Applied Electronics and Instrumentation Engineering *is a specialized branch of Electrical and Electronics Engineering, primarily focusing on the principles, operations, and sensing of measuring instruments, physical parameters used in the design and configuration of the process industry, and automated systems. This is a multi-disciplinary stream and covers subjects from various branches such as electrical, electronics, biomedical and computers.*

Year of Establishment: 1996

Program Offered and Intake: 60

B. Tech. in Applied Electronics and Instrumentation Engineering

Current intake: 60

MISSION OF HIT

- To Impart quality and value-based education to raise satisfaction level of all stakeholders.
- To create competent, creative professionals, and great entrepreneurs who can work as individual or in group in multi-cultural global environments.
- To prepare citizens who would grow to be competent enough to contribute significantly with personal integrity & civic responsibility for the betterment of mankind throughout their careers & profession.

VISION OF AEIE

- To become a dynamic contributor to the community by ensuring excellence in academic and research in the field of Applied Electronics & Instrumentation Engineering & to create an environment that will facilitate the growth of individual in this field through innovative teaching research & involvement of industry.

MISSION OF AEIE

- To produce quantity engineering graduates with the capacity of serving the arena of science, engineering, teaching, research, entrepreneurship & management.
- To add skill-set such as communication parameter, ethical inputs & to nature the characteristics lifelong learning.
- To ensure the capability of working in a team effectively in different environments & to add tenacity to build work force.

PEOs OF AEIE

PEO 1: To impart technical competency, knowledge, skill which ensure capability to solve problems in industry, Research & Academics related to instrumentation Engineering & other related disciplines.

PEO 2: To prepare the students to work effectively in various national or international public & private sector organizations.

PEO 3: To frame the mindset to enhance technical knowledge through lifelong learning may be in the structured or in the unstructured way. To impart the attributes towards successful adaptation to technological & cultural changes.

PEO 4: To add the capability to work as an individual or as a member of a team or as a team leader.

PEO 5: To fulfill the needs of society through their acquired in ethical & responsible manner.

PROGRAM OUTCOMES

1. **Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, & an engineering specialization to the solution of complex engineering problems.

2. **Problem Analysis:** Identify, formulate, review research literature, & analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences & engineering sciences.

3. **Design/development of solutions:** Design solutions for complex engineering problems & design system components or processes that meet the specified needs with appropriate consideration for the public health & safety, & the cultural, societal, & environmental considerations.

4. **Conduct investigations of complex problems:** Use research-based knowledge & research methods including design of experiments, analysis & interpretation of data, & synthesis of the information to provide valid conclusions.

5. **Modem tool usage:** Create, select, & apply appropriate techniques, resources, & modem engineering & IT tools including prediction & modeling to complex engineering activities with an understanding to the limitations.

6. **The engineer & society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal& cultural issues & the consequent responsibilities relevant to the professional engineering practice.

7. **Environment & sustainability:** Understand the impact pf the professional engineering solutions in societal & environmental contexts, & demonstrate the knowledge of & need for sustainable development.

8. **Ethics:** Apply ethical principles & commit to professional ethics & responsibilities & norms of the engineering practice.

9. **Individual & team work:** Function effectively as an individual, & as a member or leader in diverse teams, & in multidisciplinary settings.

10. **Communication:** Communicate project management & finance: Demonstrate knowledge & understanding of the engineering & management principles & apply these to one's own work, as a member & leader in a team, to manage projects & in multidisciplinary environments.

11. **Life-long learning:** Recognize the need for, & have the preparation & ability to engage in independent & life-long learning in the broadest context of technological change.

FACULTY MEMBERES

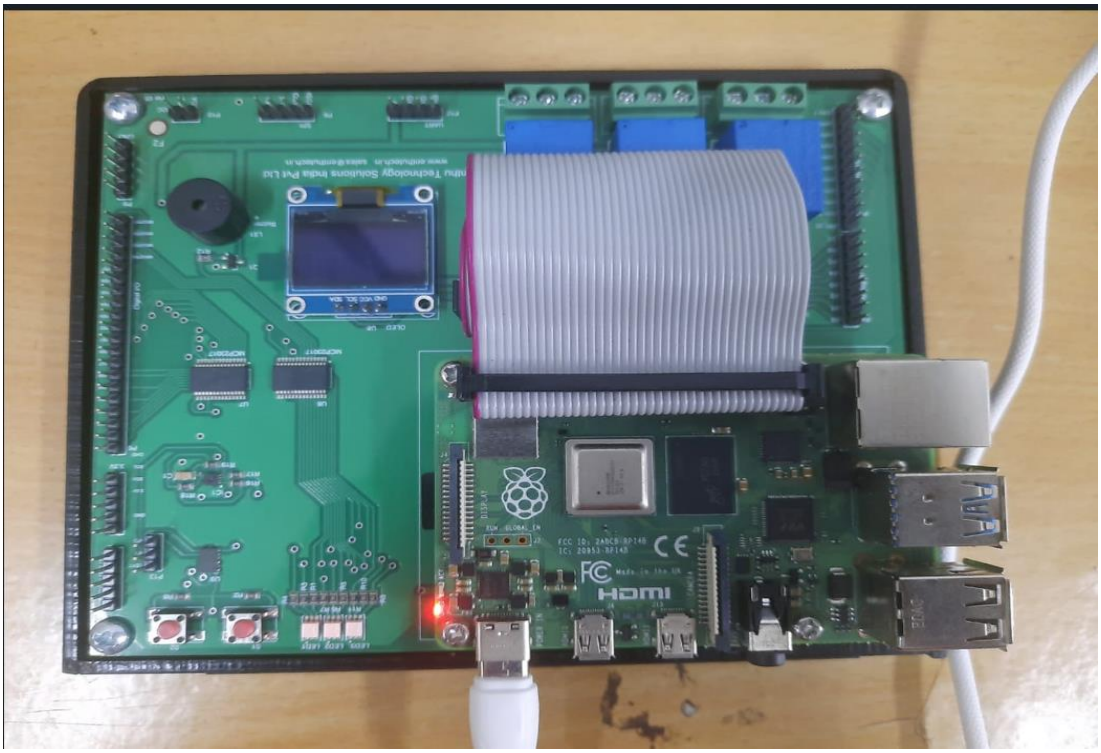
Sl. No.	Name	Designation	Qualification	Area of Specialization
1.	Dr. Uday Maji	Professor & H.O.D	M. Tech, Ph.D. (Engg)	Biomedical Instrumentation
2.	Mr. Debadatta Ghosh	Associate Professor	M. Tech.	Electronics and Measurement System
3	Dr. Madhumita Das	Assistant Professor	M. Tech., Ph.D.	Renewable Energy
4	Dr. Asim Halder	Assistant Professor	M. Tech.	Nonlinear Control System
5	Mr. Priyonko Das	Assistant Professor	M. Tech.	Instrumentation and Control
6	Mrs. Moumita Sahoo	Assistant Professor	M. Tech.	Biomedical Instrumentation
7	Mr. Rohan Mandal	Assistant Professor	M. Tech.	Signal Processing and IoT
8	Dr. Soumya Roy	Associate Professor	M. Tech., Ph.D.	Astrophysical Signal Processing
9	Mr. Somak Karan	Assistant Professor	M. Tech.	Process Control and Instrumentation
10	Mr. Soarabh Mandal	Assistant Professor	M. Tech.	Digital Signal Processing
11	Mrs. Sweta Bijali	Assistant Professor	M. Tech.	Instrumentation and Control
12	Mrs. Priyanka Rakshit	Assistant Professor	M. Tech.	Instrumentation and Control
INSTRUCTORS				
Mrs. Sutapa Maity, Mrs. Subhra Pramanik Maity, Ms. Saikat Karan, Mr. Sovan Maity				
GENERAL ASSISTANT Mr. Atanu Tripathy				

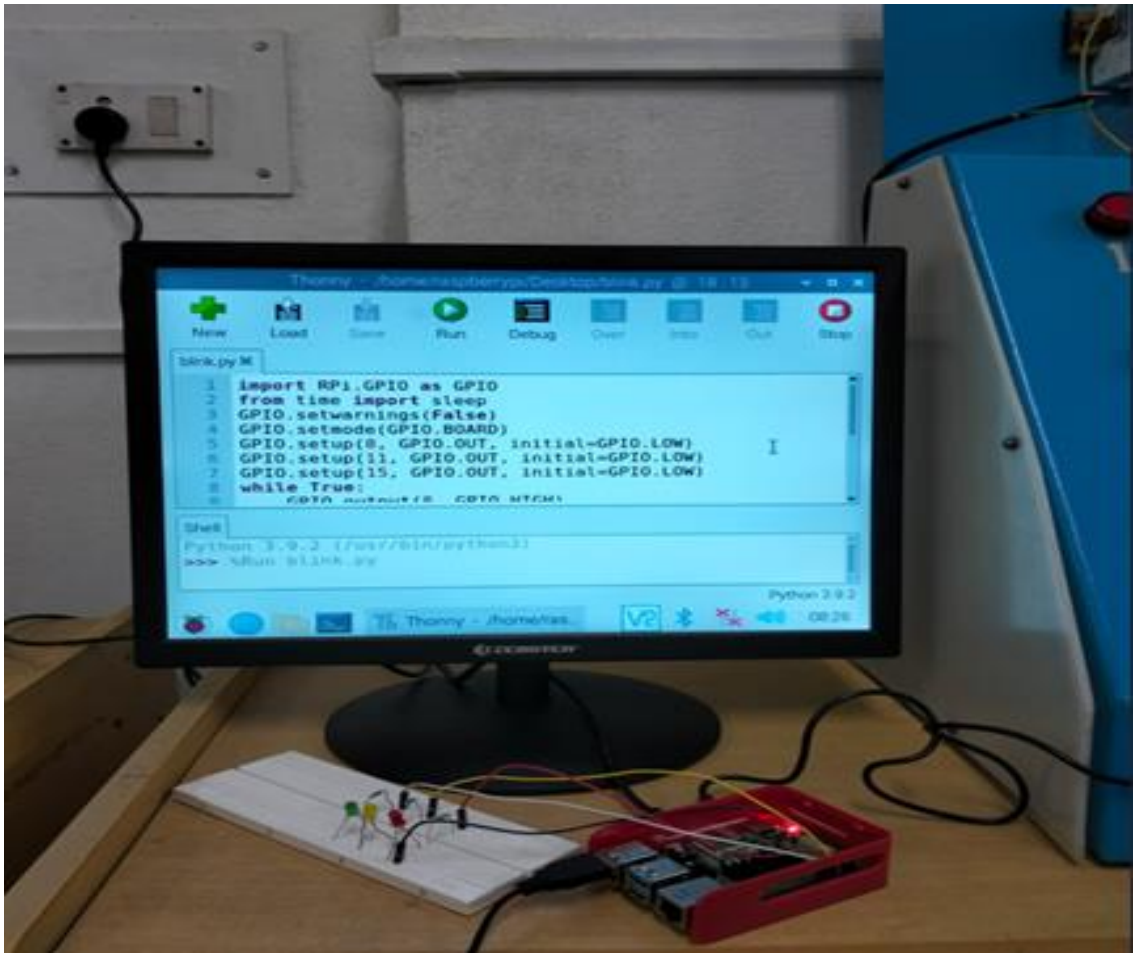
MAJOR LABORATORIES

- *Process Control Laboratory*
- *Control System Laboratory*
- *IoT Laboratory*
- *Industrial Instrumentation Laboratory*
- *Instrumentation and Design Laboratory*
- *Electronic Measurement Laboratory*
- *Telemetry Laboratory*
- *Sensor Laboratory*
- *Microprocessor Laboratory*
- *Electrical and Electronic Measurement Laboratory*

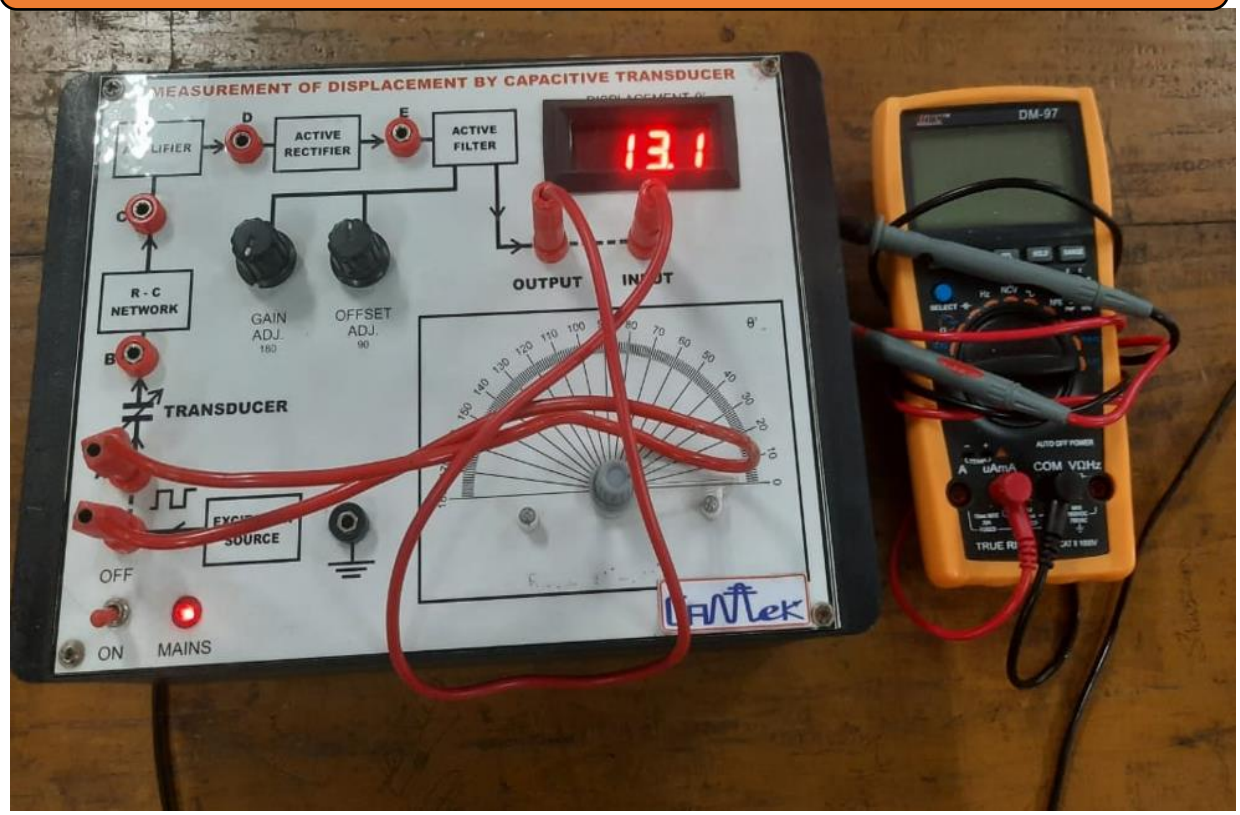
PROCESS CONTROL LABORATORY

INTERNET OF THINGS (IOT) LABORATORY




New
Load
Run
Debug
blink.py
import RPi.GPIO as GPIO
from time import sleep
GPIO.setwarnings(False)
GPIO.setmode(GPIO.BOARD)
GPIO.setup(8, GPIO.OUT, initial=GPIO.LOW)
GPIO.setup(11, GPIO.OUT, initial=GPIO.LOW)
GPIO.setup(15, GPIO.OUT, initial=GPIO.LOW)
while True:
Shell
Thonny - /home/ras

SENSORS AND TRANSDUCERS LABORATORY




500
1000
1500
kg/cm²
lb/in²

STUDENTS' CHAPTER

The International Society of Automation (ISA)-2015 10th Oct

The International Society of Automation (ISA) is a society which serves automation professionals around the world. Our department opened a student chapter on 10th October, 2015, under the ISA Kolkata chapter. Many workshops and seminars have been organized jointly by the department and the ISA student chapter since 2015.

Instrument Society of India (ISOI)-2018

The Instrument society of India (ISOI) is a society of Instrumentation professionals established in the year 1970 with headquarters at Indian Institute of Science (IISc), Bangalore. Our department has an ISOI chapter under which various seminars, workshops have been conducted. The department has recently got approval from The Institution of Engineers, India to run the student's chapter to prop up the professional activities.

DEPARTMENTAL LIBRARY

The Department Library has an assortment of 1218 books with a volume of 773 numbers of different books and journals besides the central library facility.

PAINTING

SHIBABRATA MONDAL

Intelligent Sensors

SWECHA SINHA(21/EIE/033)

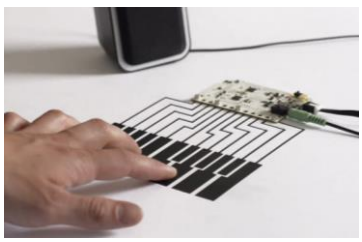
Instrumentation engineering is the science of instruments that deals with designing, developing, installing, managing and constantly improvising the instruments to be used in every walk of life. These technologies are virtually applied in every field to make work easier and simpler. The most innovative technologies that instrumentation is heading towards includes Intelligent sensors (such as, touch sensors, smoke sensors, speed sensors etc.) Smart transducers, Bluetooth technology, Bio- medical instrumentation's, Railway signalling technology, etc. Instrumentation and control systems is applied everywhere, right from R&D units to aerospace companies, thermal power plants, automobile companies, electrical equipment manufacturing companies in almost all domains of the world.

Intelligent sensors, also called "Smart Sensors", a tool for human access to information, sensors are an important part of modern information technology. This concept was first introduced by NASA in the process of developing a spaceship and formed a product in 1979. Spaceships need many sensors to send data, such as temperature, position, velocity and attitude to the ground or spacecraft, which is difficult to process such huge data at the same time using a large computer. Compared with other sensors, it has a high performance price ratio.

Some of its features are: It have high precision, reliability, stability, signal to noise ratio, resolution, performance, price ratio and also strong self-adaptability. These technologies have been used for monitoring and control mechanisms in a wide variety of environments, including smart grids, flood, water level, traffic, remote system, artificial lighting and equipment fault. While the basic sensor can only sense and emit unprocessed signals to an outer system, it is designed with numerous functions such as self-identification, self-testing or self-adaptation. It can perceive reason, compute and communicate. The electrical signals are then processed by a microprocessor to give outputs that correspond to a set of actions.

Some Intelligent Sensor Applications are: -

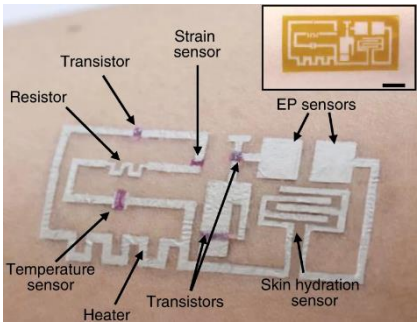
1. *Touch sensors:* A touch sensor works like a switch, while contact, touch or pressure on the surface of a touch sensor, it opens up an electrical circuit and allows currents to flow through it. It is commonly used in robots which enabling basic movement and the ability to detect touch in its surroundings, smartphones, automotive, industrial applications, kitchens which allows to control running water without physically turn the knob. It doesn't require pressure to be applied since it's built on the glass itself, hence making force insignificant to sensing requirements.

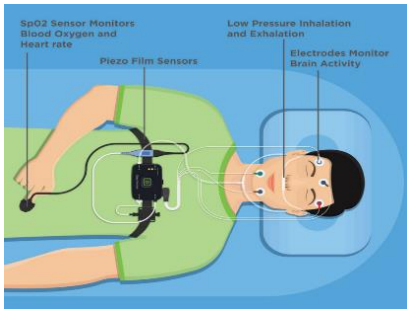


2. *Speed sensors:* A speed sensor is a type of sensor, which is used to measure rotational speed. They work by providing a voltage measurement corresponding to the magnetic rotational speed. It is a resistant to changes in pressure, has a wide

operating temperature range, is impervious to dust and humidity, and is not hindered by electromagnetic interference. Speed sensors are used in many vehicles such as automotive vehicles, aerospace vehicles, off-highway & construction vehicles, railway vehicles, and military vehicles.

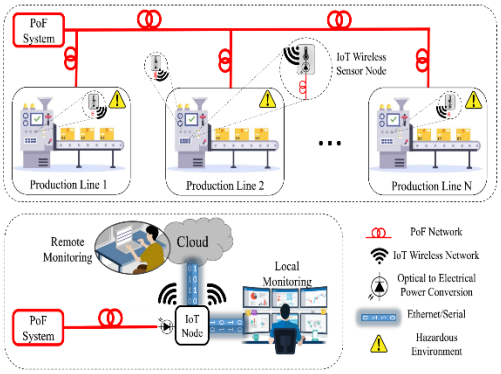
3. *Skin sensors:* Skin sensor works on the principal of biosensor by measuring important biomarkers such as lactate and oxygen levels in the skin. A flexible device that can be attached to the body freely can monitor human activities, wound care, heart rate and ultraviolet intensity. It can be used in Internet of things where it is printed on thin plastic film with the latest developed printing technology. It is also used as prosthetic skin for a robotic hand or other robotic devices. It is worn on human skin to collect multiple physical data.





4. *Sleep – Promoting "Sense" Sensors:* "Sense" sensor can automatically adjust the lights, control the heating according to the master's regulation, and even play the soothing music to promote human sleep. During sleep, it can also adjust the environment to the most comfortable condition. The sound, light, temperature, humidity and air quality can also be monitored and the sleep status of the users per night can be graded.

5. *Wireless Sensors:* In recent years, the fitness tracker has become a more popular wearable technology product. The size of the equipment has been reduced to a cubic millimetre of about one particle of dust, known as "nerve dust". These sensors can be implanted in the human body, where they will detect tissues, muscles and nerves in real-time. Wireless sensors are becoming more and more widely used in the fields of industry, agriculture, military, aviation, architecture, medical, environmental protection and so on.



POEM

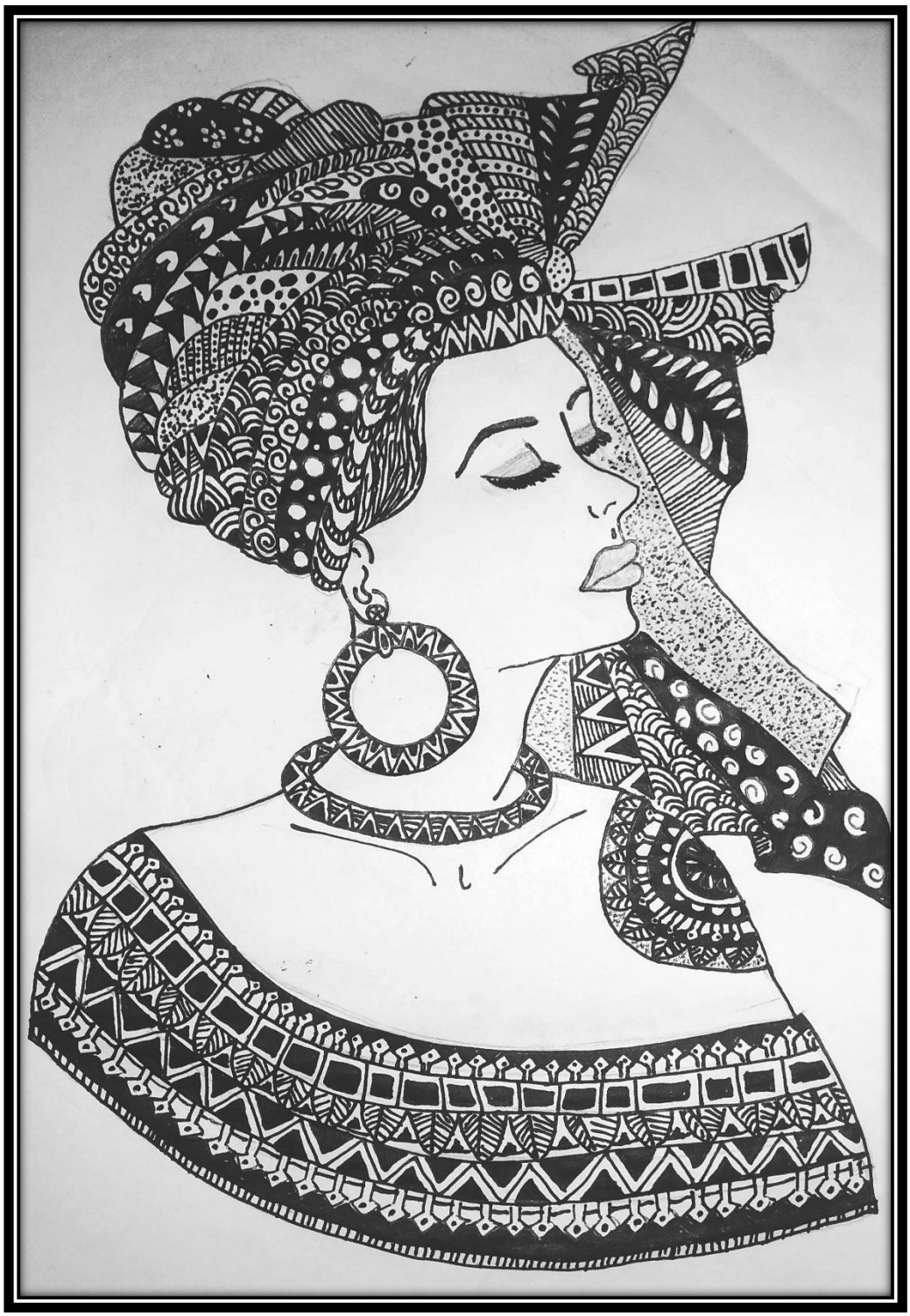
SHRISTY

The one on whose lap we sleep
Nurture us with calmest breeze
On the pleated horizon peep
Colossal the altar of her embrace

We the fruits of maternal heart
Her love is as divine as never ending sea
She the creator the destroyer of nature's art
Rebel for embroided obstacles with effervescent plea

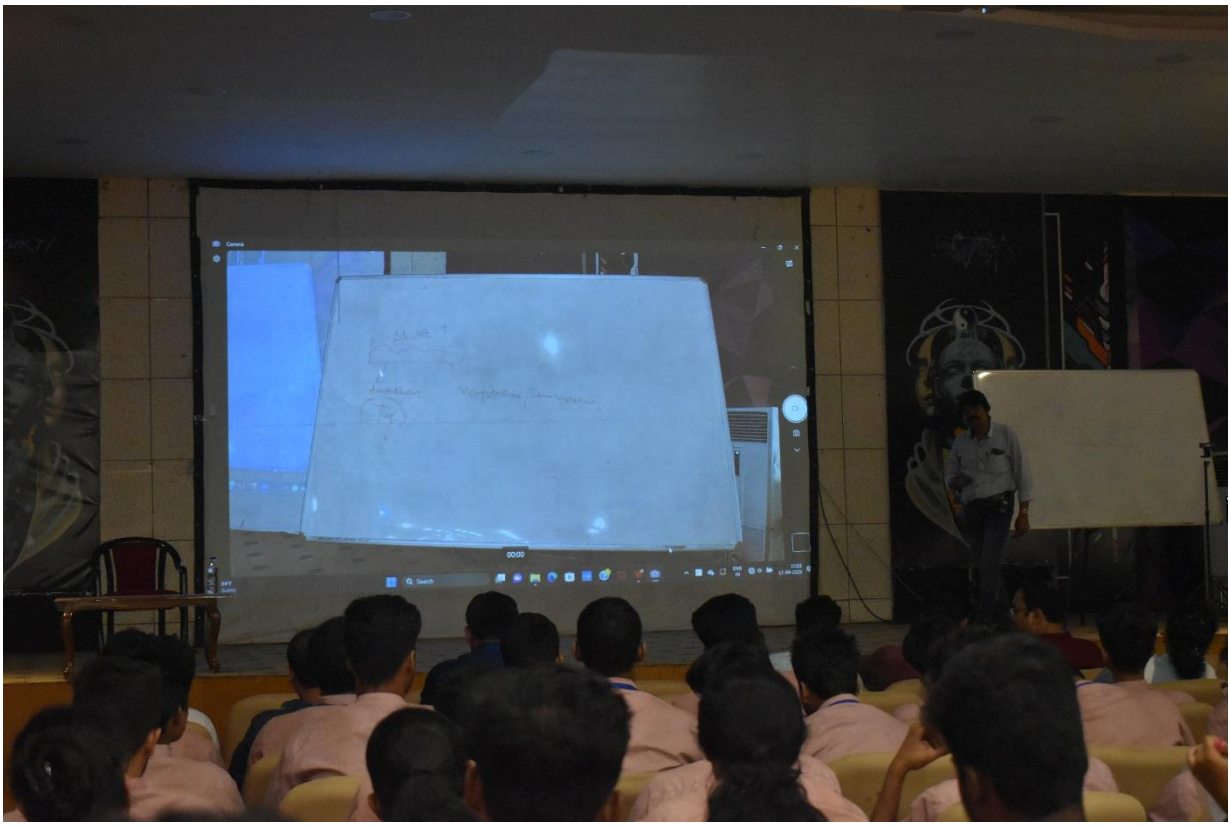
SKETCHING

DIPIKA MANDAL



WORKSHOP ON

ROLE OF INSTRUMENTATION & INTERNET TECHNOLOGY IN INDUSTRY




ONE WEEK NATIONAL LEVEL WORKSHOP
ON
ROLE OF INSTRUMENTATION AND INTERNET TECHNOLOGY IN INDUSTRY 4.0
Organised By
ELECTRONICS & INSTRUMENTATION ENGINEERING DEPARTMENT
(In Association With IQAC-HIT and ISA & ISoI HIT SC)
Date: 17/04/2023 to 21/04/2023
CHIEF PATRON
Dr. Lakshman Chandra Seth, D.Litt
Hon'ble Chairman, HIT Haldia
CHIEF GUEST
RESOURCE PERSONS
Sponsored by
isa.hit.sc@gmail.com
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ONE WEEK NATIONAL LEVEL WORKSHOP
ON
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ELECTRONICS & INSTRUMENTATION ENGINEERING DEPARTMENT
(In Association With IQAC-HIT and ISA & ISoI HIT SC)
CHIEF PATRON
CHIEF GUEST
RESOURCE PERSONS


ONE WEEK NATIONAL LEVEL WORKSHOP
ON
Organised By
ELECTRONICS & INSTRUMENTATION ENGINEERING DEPARTMENT
(In Association With IQAC-HIT and ISA & ISoI HIT SC)
ISA
CHIEF PATRON
CHIEF GUEST
RESOURCE PERSONS

SKETCH

ABHIJIT MAHATO

SKETCH

SWECHA SINHA

Idol of Lord Ganesha made up of Soil

TEACHERS' DAY CELEBRATION


Thank you
for being
a
mentor


Happy Teacher's Day
TEACHER'S DAY
HAPPY Teacher's Day
Happy Teacher's Day
HAPPY Teacher's Day
TEACHER'S DAY

SKETCH

ABHIJIT MAHATO

PHOTOGRAPHY

RAHUL KR PANDEY

OLD MEMORIES

CELEBRATIONS

NSS ACTIVITY

ENGINEERS'S Day celebration

TEACHERS' DAY CELEBRATION

ENGINEERS' DAY CELEBRATION

TEACHERS' DAY CELEBRATION

SPORT'S DAY CELEBRATION

ALUMNI

				
ARNAB BOSE	**ANUNAY SINGH**	**Shubhankar Shubham**	**Price Gautam**	**Tipu Sultan**
Senior Design Engineer, Johnson Controls	**Senior Design Engineer, Johnson Controls**	**Captain, Ministry of Defence, Indian Army**	**Executive Engineer, Yokogawa**	**Scientific Officer, Bhabha Atomic Research Centre**
Batch :2015-2019	**Batch 2015-2019**	**Batch 2013-2017**	**Batch 2015-2019**	**Batch 2007-2011**
				
Dr. Indrani Kar	**Dr. Chiranjib Koley**	**Mr. Sambuddha Khan**	**Mr. Debabrata Bhaskar**	**Mr. Subit Chakrabarti**
Associate Professor, IIT Guwahati	**Associate Professor, NIT Durgapur**	**Research Specialist, University of California, Irvine**	**Engineer, ONGC, India**	**Research Assistant, Centre for Remote Sensing, University of Florida, USA**
Batch 1996-2000	**Batch 1996-2000**	**Batch 1999-2003**	**Batch 1999-2003**	**Batch 2008-2012**
				
Akansha Gautam	Saurav Bhattacharya	Pijus Kanti Das	**SWAPNIL GIRI**	**NIRAJ KUMAR SINGH**
Grade A Officer, IOCL	**Senior Engineer**	**Management Trainee Technical**	**Haldia Petrochemicals Ltd.**	**Placed in Infosys, Wipro, Haldia Petrochemicals Ltd.**
Batch 2015-2019	**GAIL INDIA LIMITED**	**RD Centre for Iron and Steel SAIL, Ranchi**	**Batch 2013-2017**	**Batch 2013-2017**

				
N C NARAYAN	**SHUBHANKAR SHUBHAM**	**Shubhankar Shubham**	**AMISH KARIM**	**SUBHANIL CHAKRABORTY**
Placed in Wipro, Mitsubishi	**Placed in Think and Learn, IBM, Indian Army**	**Captain, Ministry of Defence, Indian Army**	**Placed in HGS, Yokogawa**	**Dynamics Finer Infosolution (P) Ltd. , THERMAX**
Batch :2013-2017	**Batch 2013-2017**	**Batch 2013-2017**	**Batch 2013-2017**	**Batch 2013-2017**
				
KUSHAL DEY	**VIVEK KUMAR KANTHA**	**AYUSH SRIVASTAVA**	**SHUBHAM KAPOOR**	**SUROJIT MUKHERJEE**
Linde India Ltd.	**Amazon India Ltd.**	**Adani Wilmar Ltd.**	**Placed in Extra marks, Haldia Petrochemicals Ltd.**	**INFOSYS, Yokogawa India Limited**
Batch 2013-2017	**Batch 2013-2017**	**Batch 2013--2017**	**Batch 1999-2003**	**Batch 2008-2012**
				
ROHAN BABBER	**MOHIT MOHAN**	**RITUPARNA BANERJEE**	**DIBYENDU DAS**	**SAURAV BHATTACHARYA**
Wipro, Haldia Petrochemicals Ltd.	**CTS, Haldia Petrochemicals Ltd.**	**Infosys, Phillips Carbon Black Ltd.**	**TCS, Wipro, Infosys, IBM**	**Infosys, Wipro, CTS, TCS, Haldia Petrochemicals Ltd.**
Batch 2016-2020	**Batch 2016-2020**	**Batch 2016-2020**	**Batch 2016-2020**	**Batch 2017-2021**

				
RISHAV RAJESHWAR	**ASHUTOSH PRAGYA**	**KRISHNA BHUSHAN**	**KUSUM SINGH**	**MAYANK AGARWAL**
Wipro, Infosys	**Infosys, TCS, CTS**	**Johnson Controls**	**Wipro, Infosys**	**NETFLIX, Infosys, PWC, CTS,**
Batch :2017-2021	**Batch :2017-2021**	**Batch :2017-2021**	**Batch :2017-2021**	**Batch 2018-2022**
				
VAISHNAVI BHARADWAJ	**VIVEK KUMAR KANTHA**	**SUDEB MANDAL**	**SHREYA JHA**	**MOUMITA MAHAPATRA**
Wipro, CAPGEMINI, CTS, ACCENTURE, TCS	**Amazon India Ltd.**	**CAPGEMINI, WIPRO, CTS, PCBL, ASOCSCLOUD, PWC, HPL**	**ACCENTURE, CTS, JSW**	**ACCENTURE, CTS, CAPGEMINI, TCS,**
Batch 2018-2022	**Batch 2018-2022**	**Batch 2018--2022**	**Batch 2018-2022**	**Batch 2018-2022**
				
YUVIKA VATSA	**SHRIZITA CHAKRABORTY**	**MD RAGHIB SHAKEEL**	**ARPANA**	**AASHNA SUMAN**
CAPGEMINI CTS, Mindtree, Hexaware, Wood India	**ACCENTURE , ITC INFOTECH, MINDTREE, TCS**	**PWC , CAPGEMINI, Hexaware**	**ITOBUZ(6.5LPA), Hexaware**	**Placed in JSW**
Batch 2018-2022	**Batch 2018-2022**	**Batch 2018-2022**	**Batch 2018-2022**	**Batch 2018-2022**

INSPIRE 2023

HALDIA INSTITUTE OF TECHNOLOGY
JNANAM VIJNANAM SAHITAM

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