

# ANNUAL REPORT

## 2021-22



Indian Institute of Information Technology  
Guwahati

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## Director's Message

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The Covid-19 pandemic continued to have an impact on the functioning of the Institute. Classes were held in online mode in the Monsoon 2021 semester. There was a plan to start physical classes in the Winter 2022 semester, from the beginning of January, but the third wave of Covid-19 in January, caused a delay. Physical classes were started from 15<sup>th</sup> of March 2021, but with the students optionally allowed to continue their learning in online mode. As in the previous year, the Institute allowed students to remain in the hostels with one student per room. On an average, about 200 students were on campus at a time (out of a total of more than 800 students). JEE entrance exams were again postponed in 2021, and so, admission to the B.Tech programme got delayed, and classes for the first year started from December 27 2021, whereas they should have started in the beginning of August. Their first semester was from December to April, with the second semester planned from April to July.

The Institute received no funds from its stakeholders. The TEQIP project had also ended in March 2021. The Institute met its expenditure entirely from its own income, which was primarily from fees. The Institute needed more hostel seats to accommodate all its students. As a loan was not forthcoming from any source, the prepared a plan to construct a single storey, "Assam-type" boys' hostel of capacity 96, and to extend the Girls' hostel by a similar structure of capacity 30. The estimated expenditure of Rs. 6.31 crores was to be met from the Institute's income. A tender was floated, and the work was allotted in January 2021. The Institute also created a lake as per the Master Plan. The excavated soil was used to fill up areas required for the new hostels and for future construction.

The Govt. of Assam announced a grant of Rs. 10 crores to the Institute in its budget of 2022-23. This has set in motion a larger construction programme to be taken up in 2022-23 and succeeding years.

## Board of Governors

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The following are the members of the Board of Governors in the year 2021-22:

1. Mr. S. Ramadorai (Chairman) – TCS.
2. Prof. Shivaji Bandyopadhyay (Member) – Director NIT Silchar.
3. Prof. Bhabesh Chandra Goswami (Member) – VC Cotton University.
4. Prof. T.G. Sitharam (Member) – Director, IIT Guwahati.
5. Mr. Ranjit Barthakur (Special Invitee) – Govt. of Assam.
6. Mr. Dilip Kumar Das (Member till February 2022) – Oil India Ltd.
7. Mr. Prasanta Borkakoty (Member from March 2022) - Oil India Ltd.
8. Dr. K. Kesavsamy (Member till March 2022) – TCS.
9. Dr. Indrajit Bhattacharya (Member from March 2022) - TCS
10. Principal Secretary, Dept. of Education Govt. Of Assam.
11. Mr. Subrata Ghosh – SREI.
12. Dr. Rakesh Ranjan (Member) – Addl. Secretary, MoE Govt. of India. (from May 2020)
13. Prof. T. Punniyamurthy (Member) – Dean Faculty Affairs IIT Guwahati.
14. Prof. Chitralekha Mahanta (Member) – Dean Academic Affairs, IIT Guwahati

The Board met four times during the year 2021-22 all through Online mode (7<sup>th</sup> July 2021, 12<sup>th</sup> October 2021, 30<sup>th</sup> December 2021, 25<sup>th</sup> March 2022).





## Building and Works Committee

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The following are the members of the Building and Works Committee in the year 2021-22:

1. Director, Chairman
2. Principal Secretary or his nominee, Education Dept., Govt. of Assam
3. Prof. Arvind Kr. Singh, Professor, Dept. of Civil Engineering, IIT Guwahati, nominee of MoE, Gol
4. Mr. Kaushik Basu, AGM, IPD TCS, nominee of Industry Partner
5. Prof. Anjan Dutta, Former Dean Institute Works, IIT Guwahati - nominee of the Board
6. Mr. Gajen Ch. Das, Former S.E (PWD) and Advisor Design, Assam Police Housing Corporation
7. Dr. Ferdous Ahmed Barbhuiya, Associate Dean (R&D), IIIT Guwahati
8. Mr. Nirupam Roy, HoS (Engineering), IIT Guwahati - Special Invitee
9. Mr. Sankar Krishna Das, Regional In-charge, HPL - Invitee
10. Superintending Engineer/Estate Officer, IIIT Guwahati - Secretary

The BWC met for four times during the year 2021-22 all through Online mode (24<sup>th</sup> June, 21<sup>st</sup> Sept, 23<sup>rd</sup> Dec 2021 and on 24<sup>th</sup> Feb-2022).

# Senate

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The following are the members of the Senate in the year 2021-22:

1. Director of the Institute - Chairman of the Senate
2. All Faculty members at the level of Assistant Professors and higher.
3. Prof. Pranab Jyoti Das, Ex-Professor, Department of Chemistry and former Dean, Faculty of Science, Gauhati University.
4. Prof. Dhruva Kr. Bhattacharyya, Dean of Academic Affairs and Professor, Department of Computer Science and Engineering, Tezpur University.
5. Prof. Samarendra Dandapat, Department of Electronics and Electrical Engineering, Indian Institute of Technology Guwahati.
6. Registrar - Non Member Secretary

The Senate met twice during the year 2021-22 both through Online mode (18<sup>th</sup> June 2021 and 12<sup>th</sup> November 2021).



# Academics

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## Convocation

No Convocation was held during the year 2021-22 due to the Covid pandemic situation.

## Academic Programmes

### B.Tech Programme

Students are admitted through the Joint Entrance Examination (JEE) conducted by CBSE for Centrally Funded Technical Institutes. Reservations of seats are as per the Central Educational Institutions (Reservation in Admission) Act, 2006. B.Tech programmes in CSE and ECE were started in 2013. The sanctioned strength in 2021 was 200 (CSE: 115, ECE: 85). Twenty percent of these seats were added as supernumerary seats for girl students and 3% reservations for EWS was incorporated, without reducing the number of general category seats, resulting in an intake of 254. Admissions were delayed due to the Covid pandemic and classes for the first year started on December 13 2021. The actual number of students who remained after initial drop-outs was 229 (CSE- 160, ECE- 69).

### M.Tech Programme

M.Tech programmes in CSE and ECE which were started in 2018 had an intake of 60 (CSE 35, ECE 25). An online mode was introduced in the M.Tech programme in CSE from 2020. Further, an online mode with the existing Specialization 'Communication and Signal Processing' and a new specialization 'VLSI and Embedded System' were introduced in ECE from 2021. The actual number of students who joined were 49 [CSE (on-campus) – 19, CSE (online) - 11, ECE-CSP (on-campus) – 7, ECE-CSP (online) – 8, ECE-VLSI - 5].

### PhD Programme

The following numbers of students were admitted to the PhD programme in 2021-22.

Department	Full-time	Part-time	Total
CSE	8	1	9
ECE	3	0	3
Science and Mathematics	5	0	5
HSS	4	0	4

3 students – 2 in ECE and 1 in Mathematics, have completed their PhD programmes in 2021-22 and provisional certificates were issued to them.

## Student Profile

At the end of March 2022, there were 1001 students in the Institute with the following profile:

	Male	Female	General	OBC	SC	ST	Total
B.Tech CSE 2018	113	5	69	32	10	7	118
B.Tech ECE 2018	66	2	32	26	9	1	68
B.Tech CSE 2019	126	27	77	44	24	8	153
B.Tech ECE 2019	46	11	24	28	4	1	57
B.Tech CSE 2020	121	22	70	41	19	13	143
B.Tech ECE 2020	43	6	19	19	9	2	49
B.Tech CSE 2021	135	25	77	47	24	12	160
B.Tech ECE 2021	61	8	30	26	9	4	69
<b>B.Tech Total</b>	<b>711</b>	<b>106</b>	<b>398</b>	<b>263</b>	<b>108</b>	<b>48</b>	<b>817</b>
M.Tech CSE 2020 (online)	11	3	13	1	0	0	14
M.Tech CSE 2020 (on-campus)	8	8	12	1	1	2	16
M.Tech ECE 2020	1	6	4	3	0	0	7
M.Tech CSE 2021 (online)	9	2	9	0	1	1	11
M.Tech CSE 2021 (on-campus)	12	7	12	4	2	1	19
M.Tech ECE 2021 (online)	5	3	7	0	1	0	8
M.Tech ECE 2021 (on-campus)	9	3	7	4	1	0	12
<b>M.Tech Total</b>	<b>55</b>	<b>32</b>	<b>64</b>	<b>13</b>	<b>6</b>	<b>4</b>	<b>87</b>
PhD CSE (Regular)	11	8	16	2	0	1	19
PhD CSE (Part-time)	18	7	20	1	4	0	25
PhD ECE (Regular)	12	7	16	3	0	0	19
PhD ECE (Part-time)	12	5	14	1	1	1	17
PhD HSS (Regular)	1	8	8	0	0	1	9
PhD HSS (Part-time)	1	1	2	0	0	0	2
PhD Maths (Regular)	4	2	4	1	0	1	6
PhD Maths (Part-time)	0	0	0	0	0	0	0
PhD (regular)	28	25	44	6	0	3	53
PhD (Part-time)	31	13	36	2	4	1	44
<b>PhD Total</b>	<b>59</b>	<b>38</b>	<b>80</b>	<b>8</b>	<b>4</b>	<b>4</b>	<b>97</b>
<b>Grand Total</b>	<b>825</b>	<b>176</b>	<b>542</b>	<b>284</b>	<b>118</b>	<b>56</b>	<b>1001</b>



## Faculty and Staff

The faculty profile at the end of March 2022 is as below:

	Male	Female	Gen	OBC	SC	ST	Total
Associate Prof. CSE	3	1	3	0	1	0	4
Asst. Prof CSE	11	4	9	4	1	1	15
Professor CSE (on contract)	1	0	1	0	0	0	1
Associate Prof ECE	2	1	3	0	0	0	3
Asst. Prof. ECE	9	6	12	1	2	0	15
Associate Prof. Maths	1	0	1	0	0	0	1
Asst. Prof. Maths	2	2	4	0	0	0	4
Associate Prof. HSS	0	1	1	0	0	0	1
Asst. Prof. HSS	4	1	4	1	0	0	5
<b>Total</b>	<b>33</b>	<b>16</b>	<b>38</b>	<b>6</b>	<b>4</b>	<b>1</b>	<b>49</b>

The staff profile at the end of March 2022 is as below:

Item	Male	Female	Gen	OBC	SC	ST	Total
Registrar	1	0	1	0	0	0	1
Assistant Registrar	1	0	1	0	0	0	1
Superintending Engineer	1	0	1	0	0	0	1
Senior Superintendent	5	1	4	1	0	1	6
Junior Accounts Officer	1	0	1	0	0	0	1
Senior Technical Superintendent	4	0	1	2	1	0	4
Junior Technical Superintendent	2	0	0	1	1	0	2
Library Information Officer	1	1	0	1	0	1	2
Junior Assistant	7	2	6	2	1	0	9
<b>Total</b>	<b>23</b>	<b>4</b>	<b>15</b>	<b>7</b>	<b>3</b>	<b>2</b>	<b>27</b>

# Status of filling up of Backlog Vacancies

Faculty in position (As on 31.03.2022)

Name of the Post	Position	Filled Up							Vacant						
		OBC	SC	ST	EWS	PWD	Gen	Total	OBC	SC	ST	EWS	PWD	Gen	Total
Professor	84	0	0	0	0	0	0	0							
Associate Professor		0	1	0	0	0	8	9							
Assistant Professor		6	3	1			29	39	14	8	5	2		7	36
Total		6	4	1	0	0	37	48	14	8	5	2		7	36

Non-Faculty in position (As on 31.03.2022)

Pay Level	Post sanctioned by MoE/ as per norms of student strength	Category wise breakup of posts							Post filled							Post vacant					Remarks																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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# Research and Development

## Publications

The number of publications by faculty members in the year 2021-22 is as in the table below. There is an increase in the total number of journal publications, whereas there is a decrease in the total number of conference publications and book chapters. The overall publications compared to last year remains the same.

Year	Journals	Conferences	Book chapters	Newspaper Articles	Total
2021-22	55	69	7	-	131
2020-21	45	78	8	6	137
2019-20	35	59	3	-	97
2018-19	20	41	3	-	64
2017-18	14	44	3	-	61

## Sponsored Research

An important source of funding for research is sponsored research funding. A number of projects were obtained in the last one year. The details are as follows:

### New Projects granted in April 2021 to March 2022

Sl. no	Project Title	Name of the PI	Funding Agency	Project Amount (INR)	Project start date
1	Study of degree regular maps on surfaces and groups generated by the symmetries of the maps	Dr. Dipendu Maity	NBHM, Dept. of Atomic Energy	15,15,900.00	12.08.2021
2	Study of group actions on degree-regular maps and surfaces with symmetry	Dr. Dipendu Maity	DST-SERB	13,60,634.00	13.12.2021
3	Feasibility study of zero trust in InstaSafe framework	Dr. Srinibas Swain	Instasafe	1,03,400.00	28.12.2021
4	On Performance of structural damage detection based on: mathematical and machine - learning models in harmony, and domain adaptation	Dr. Moumita Roy (Co-PI)	DST-SERB	6,93,000.00	31.12.2021

	with scaled physical model using limited sensors				
5	Design of 8 BIT 1 GSPS Flash ADC	Dr. Sounak Roy	ISRO, Dept. of Space	20,74,000.00	14.02.2022
<b>Total</b>				<b>57,46,934.00</b>	

**On-going projects from the previous year are given below:**

Sl. no.	Project Title	Name of the PI	Funding Agency	Project Amount (INR)	Project start date
1	Faculty Fellowship	Prof. Gautam Barua	NetApp	4,04,055.00	07.06.2016
2	Establishment of a Design Innovation Centre (DIC) (Spoke) with NEHU (HUB)	Director	MHRD through NEHU	63,71,400.00	01.03.2017
3	Transformations and special values of Gaussian hypergeometric series; and their connections to supercongruences	Dr. Gautam Kalita	DST-SERB	5,02,127.00	17.05.2018
4	Hypergeometric Series, and (super)congruences for Apery-like numbers	Dr. Gautam Kalita	NBHM, Dept. of Atomic Energy	3,72,500.00	24.12.2018
5	Energy Efficient 5G Hybrid Optical Wireless Communication System Based on High-Speed FSO/ VLC Interconnections	Dr.Sanya Anees	DST-SERB	24,17,250.00	18.09.2018
6	Reconfigurable 3DIC Hardware Accelerator Platform for Deep Neural Networks	Dr. Soumyajit Poddar	DST-SERB	27,04,000.00	25.02.2019
7	Apery-like numbers, hypergeometric functions, and related supercongruences	Dr. Gautam Kalita	DST-SERB (MATRIC S)	6,60,000.00	21.05.2019
8	Interventions and women's acceptance of cervical cancer	Dr. Hari Kanta Choudhury,	ICSSR	4,96,650	20.08.2019



	screening test: A Randomized				
9	Effects of Nonpharmaceutical Measures on COVID-19 Pandemic in India and Network-based Forecast Beyond Relaxation of Lockdown	Dr. Surajit Panja	DST-SERB	5,50,000	07.07.2020
10	Context Aware Service Provisioning Towards Smart Tourism	Dr. Soumi Chattopadhyay	DST-SERB	16,82,200	04.11.2020
11	Security and Privacy Preserved Automatic Health Emergency Detection and MSP Selection in IoT Based Smart Healthcare System	Dr. Subhasish Dhal	DST-SERB	19,60,268	05.12.2020
12	Design of Structure-Preserving Deep Neural Networks for Improved Generalization	Dr. Kaustav Nag	DST-SERB	15,17,200	07.12.2020
13	Signal processing for co-existence between radar and future communication systems	Dr. Sudip Biswas	DST-SERB	18,19,380	09.12.2020
14	Detection and Forecasting of Extreme Weather Events in Egypt and India Using Deep Learning	Dr. Shovan Barma	DST (International Bilateral Cooperation Division)	9,10,000	09.02.2021
15	Control-Theoretic Distributed Optimal Resource Allocation Approaches to Hinder Epidemic Spreading over Networks and its Forecasting for Indian Cities	Dr. Surajit Panja	DST-SERB	18,04,000	02.03.2021
16	Design and Development of an Assistive Device for	Dr. Kaustuv Nag	DST-SEED	18,99,544	30.03.2021

	Persons with Motor Neuron disease	Co PI: Dr. Rakesh Matam			
	TOTAL			2,60,70,574.00	

**Projects that ended in 2021-22 are given below:**

Sl. No.	Project Title	Name of the PI	Funding Agency	Project Amount (INR)	Project end date
1	Classification of EEG Data Using Deep Learning (LSTM+CNN) Technique and Hilbert Vibration Decomposition (HVD) Method and Its Application in Epileptic Seizure Detection	Dr. Shovan Barma	DBT - NECBH Twinning (IIT Guwahati)	9,24,000.00	28-04-2021
2	A Low Cost, Portable and High Quality Device (Prototype) for Food Quality Assessment Based on Microscopic Image and Deep Learning	Dr. Shovan Barma	DST-SERB	17,00,873.00	27-12-2021
3	A Low-Cost, high Resolution Optoacoustic Imaging System for Diagnosing and Monitoring Rheumatoid Arthritis	Dr. Rusha Patra	DST-SERB	31,74,600.00	17-03-2022

**List of Ongoing Consultancies**

Sl. no.	Consultant	Consulting Agency	Consultancy Amount (INR)
1	Prof. Gautam Barua	General Insurance Corporation Ltd.	7,00,000.00
2	Prof. Gautam Barua	North Eastern Electric Power Corporation Ltd.	6,00,000.00
3	Prof. Gautam Barua	GIC Housing Finance Ltd.	10,00,000.00
4	Prof. Gautam Barua	Assam Gas Company Ltd.	4,10,000.00
5	Dr. Ferdous Ahmed Barbhuiya	Special Branch, Assam Police, Govt. of Assam	8,00,000.00
6	Dr. Ferdous Ahmed Barbhuiya	Accenture, LLP	18,10,502.00



## **ATAL FDP conducted in IIITG during April 2021 to March 2022**

Sl. no	Project Title	Name of the PI	Funding Agency	Project Amount (INR)	Event Duration
1	Device Security in Internet of Things	Dr. Rakesh Matam	AICTE	93,000.00	07.08.2021 to 11.08.2021
2	Blockchain and its Security Perspectives'	Dr. Subhasish Dhal	AICTE	93,000.00	06.12.2021 to 10.12.2021

## **Collaborations**

### **MoU with International Institutions:**

1. Network "n+i" - engineering institutes, France
2. College of Engineering, National Sun Yat-Sen University (NSYSU), Taiwan

### **MoU with National Institutions:**

1. Electronics & ICT Academy, IIT Guwahati
2. CDAC, Mohali
3. Software Technology Parks of India (STPI)

### **Collaboration with International Institutions:**

Faculty name (IIITG)	Nature of Collaboration (project/publication/patent/others)	Name of the collaborating institute	Country	Present Status (completed/ongoing)
Subhasish Dhal	Publication	San Diego State University	United States	Ongoing
Soumi Chattopadhyay	Publication	The Chinese University of Hong Kong	Hong Kong	Completed
	Publication	CSIRO, Australia	Australia	Ongoing
Shovan Barma	Publication	University of Macau	Macau, China	Ongoing
	Project	NARSS, Egypt	Egypt	Ongoing
	Project	NCKU, Taiwan	Taiwan	Ongoing
Ferdous A. Barbhuiya	Student Visit, Publication	Télécom SudParis	France	Ongoing
	Student Visit, Publication	The University of Newcastle	Australia	Ongoing
Sanjay Moulik	Publication	Norwegian University of Science and Technology	Norway	Ongoing

Rakesh Matam	Project, Publication	Nanjing University of Information Science and Technology	China	Ongoing
	Publication	Universitat Politcnica de Valencia, Spain	Spain	On going
	Publication	University of Nicosia, Nicosia, Cyprus	Cyprus	Ongoing
	Publication	Hellenic Mediterranean University, Crete, Greece	Greece	Completed
Moumita Roy	Publication	University of Trento, Italy	Italy	Completed
Srinibas Swain	publication	Purdue University	USA	Completed
	publication	University of North Texas	USA	Completed
	publication	Khalifa University	UAE	Ongoing
	publication	Monash University	Australia	Ongoing
	publication	Victoria University	Australia	Ongoing
	publication	Deakin University	Australia	Ongoing
Mourina Ghosh	publication	University of Newcastle	UK	Completed
	publication	Liaocheng University	China	Ongoing/ Completed
Dipendu Maity	Publication	State University of Maringá, Maringá - PR, Brazil	Brazil	1 completed and 1 ongoing
Shyamal Ghosh	Publication	Queen Mary University of London	UK	One completed and one ongoing
	Publication	University of the Free State, Bloemfontein	South Africa	One completed and one ongoing
Farha Sultana	Publication	Bing'öl Universities, Bing'öl, Turkey	Turkey	1 completed and 3 ongoing
	Publication	The High Institute for Tourism and computer, Alexandria, Egypt	Egypt	2 ongoing
	Publication	Shahrekord University, Shahrekord, Iran	Iran	1 ongoing
	Publication	University of Zanjan, Zanjan, Iran	Iran	1 ongoing

#### Collaboration with National Institutions:

Faculty name (IIITG)	Nature of Collaboration (project/ publication/ patent/others)	Name of the collaborating institute	Present Status (completed/ ongoing)
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Subhasish Dhal	Project, Publication	NIT Karnataka, Surathkal	Ongoing
Bidisha Dasgupta	Publication	Space Applications Centre, Indian Space Research Organization, Microwave Remote Sensors Area, Ahmedabad, Gujarat, India	Completed
Soumi Chattopadhyay	Publication, Project	Indian Statistical Institute	Ongoing
		Indian Institute of Technology Patna	Ongoing
		Indraprastha Institute of Information Technology Delhi	Ongoing
Shovan Barma	Project, Publication	IIT Kharagpur	Ongoing
		IIT Guwahati	Ongoing
		Jadavpur University	Ongoing
		IIT Indore	Ongoing
		IIT Madras	Ongoing
Sanjay Moulik	Publication	Nvidia Graphics, Bangalore	Ongoing
Upasana Talukdar	Publication	IIT Guwahati	Ongoing
Rakesh Matam	Publication	IIT Patna	Ongoing
	Publication	BITS Pilani, Hyderabad	Ongoing
	Publication	Mnit Allahabad	Ongoing
Ferdous A. Barbhuiya	Publication	Tezpur University	Ongoing
	Project, Publication	IBM Research Lab	Ongoing
	Project, Publication	Accenture Tech Lab	Ongoing
Manojit Ghose	Publication	IIT Guwahati, NIT Meghalaya	Ongoing
Moumita Roy	Project, Publication	IIITDM Kurnool, NIT Silchar, ISI Kolkata, Jadavpur University	Ongoing/Completed
Srinibas Swain	Publication	IIT Guwahati	Ongoing
Babita Jajodia	Publication	IIT Jodhpur	Completed
Mourina Ghosh	Publication	NIT Manipur, NIT Patna, Calcutta University	Ongoing/Completed
Shyamal Ghosh	Publication	Indian Institute of Technology Bombay	Ongoing
Farha Sultana	Publication	IIT Kanpur, ISI Kolkta, NIT Rourkela, IIM Indore, Chandigarh University	4 Completed, 8 Ongoing
Dipendu Maity	Publication	IIT Patna, IISc Bangalore, BHU	4 Completed, 3 Ongoing
Rusha Patra	Publication	IIT kharagpur, NIT Rourkela	2 completed

## Internal Committee (IC)

In compliance with the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act 2013 of the Ministry of Law and Justice, Govt. of India, IIIT Guwahati has constituted the Internal Complaints Committee in November 2018, which is renamed as Internal Committee by an order of the Government of India.

### **I. Number of complaints received by IC during the Year 2021-22: Nil.**

Formal Complaints received during the year 2021-22 = Nil.

Informal Complaints received during the year 2021-22 = Nil.

### **II. List of IC Meetings held in Year 2021-22**

Sl. No.	Description	Meeting Date and Time	Mode	No. of Participants
1	5 <sup>th</sup> Meeting of IC	18 <sup>th</sup> November 2021 at 11:00 AM	Online	5 (all members present)
2	6 <sup>th</sup> Meeting of IC	10 <sup>th</sup> February 2022 at 5:00 PM	Online	5 (all members present)

### **III. List of Meetings and Programmes conducted by IC during the Year 2021-22:**

Sl. No.	Programme	Attendees/ Target group	No. of participants	Date, time and venue	Presiding Officer/ Resource Person
1	Gender Sensitization Programme (Induction Programme)	B.Tech 1 <sup>st</sup> year	207	19.12.2021 at 2:00 PM (online mode)	Dr. Poonam Kakoti Borah, Asst. Prof., Deptt. of WS, Gauhati University
2	Gender Sensitization Programme	IIITG Faculty and Staff	30	28.12.2021 at 11:00 AM (online mode)	Dr. Poonam Kakoti Borah, Asst. Prof., Deptt. of WS, Gauhati University
3	Talk on 'Safety of Women'	B.Tech, M.Tech & PhD students, all faculty and staff of IIITG	40	03.09.2021 at 3:30 PM (Google Meet)	Ms. Nilanju Dutta, North East Network



4	Gender Sensitization Programme	IIITG Outsourced Staff and Domestic Workers working in Faculty residence	50	08.03.2022 at 4:00 PM IIITG campus	Dr. Suranjana Barua, Associate Prof., IIITG and ICC Presiding Officer
5	Prize Money Speech Competition on occasion of International Women's Day 2022. Title: "Women's Empowerment: Problems and Solutions".	Competitors from Outsourced staff & Domestic Workers	9	08.03.2022 at 4:00 PM IIITG campus	--
		<b>Total Participants</b>	<b>336</b>		

# **Department of Computer Science Engineering**

## **Faculty:**

1. Dr. Gautam Barua, Professor, Operating Systems, Networks, Database Management Systems.
2. Dr. Ferdous Ahmed Barbhuiya, Assoc. Professor, Information Security, Intrusion Detection/Prevention System, Secure System Design, Privacy in Cloud, Firewall and Access Control
3. Dr. Moumita Roy, Assoc. Professor, Machine Learning, Soft Computing, Pattern Recognition, Remotely Sensed Image Analysis.
4. Dr. Rakesh Matam, Assoc. Professor, Wireless Networks, Network Security, Privacy in Mobile Networks, Security in IoT.
5. Dr. Subhasish Dhal, Assoc. Professor, Information Security, Cloud Computing, Security in RFID, Key Distribution in Wireless Networks.
6. Dr. Angshuman Jana, Asst. Professor, Formal Methods, Static Program Analysis and Verification, Information Flow Security Analysis, Abstract Interpretation, Model checking.
7. Dr. Debashree Devi, Asst. Professor, Artificial Intelligence, Pattern Recognition, Machine Learning, Soft Computing and Data mining.
8. Dr. Kaustuv Nag, Asst. Professor, Evolutionary Computation, Machine Learning, Neural Networks.
9. Dr. Manojit Ghose, Asst. Professor, Cloud computing, Multiprocessor scheduling, Computer architecture.
10. Dr. Nilkanta Sahu, Asst. Professor, Image and Video processing.
11. Dr. Parashjyoti Borah, Asst. Professor, Machine Learning, Pattern Classification.
12. Dr. Phrangboklang Lyngton Thangkhiew, Asst. Professor, Computer Architecture, Logic Design using emerging memory technologies.
13. Dr. Radhika Sukapuram, Asst. Professor, Computer Networks, especially Software Defined Networks and Network Functions Virtualisation Distributed Systems.
14. Dr. Rohit Tripathi, Asst. Professor, Game Theory, Online Social Networks and Network Economics.
15. Dr. Sanjay Moulik, Asst. Professor, Real-time Scheduling, Energy Aware Fair Scheduling, Optical Character Recognition, Software Engineering.
16. Dr. Soumi Chattopadhyay, Asst. Professor, Services Computing, Artificial Intelligence, Machine Learning, Formal Methods, Automated logic and reasoning.



17. Dr. Srinibas Swain, Asst. Professor, Algorithms, graph theory, complexity theory, theoretical computer science and discrete mathematics.
18. Dr. Subhrangsu Mandal, Asst. Professor, Temporal Graph Algorithms, Dynamic Graph Algorithms, Distributed Algorithms.
19. Dr. Sumit Mishra, Asst. Professor, Algorithms in Evolutionary Computation, Cluster Analysis.
20. Dr. Upasana Talukdar, Asst. Professor, Artificial Intelligence, Machine Learning, Brain-Computer Interface, Knowledge Representation.

### **Adjunct Faculty**

21. Dr. Kuntal Dey, Accenture Ltd, Natural Language Processing

### **Publications by the department:**

#### **Journal Publications:**

1. Yanshul Sharma, Shounak Chakraborty, and Sanjay Moulik. "ETA-HP: an energy and temperature-aware real-time scheduler for heterogeneous platforms". Journal of Supercomputing, Springer, 2022.
2. Kalyanee Devi and Rohit Tripathi, "Optimal Seed Node Selection Method for LTIS Model," Concurrency and Computation: Practice and Experience, 2022.
3. Rohit Tripathi and Shilpa Rao. "Rumor containment in peer-to-peer message sharing online social networks". International Journal of Data Science and Analytics, 2022.
4. Nikumani Choudhury, Rakesh Matam, Mithun Mukherjee, and Jaime Lloret. 2021. DADC: A Novel Duty-cycling Scheme for IEEE 802.15.4 Cluster-tree-based IoT Applications. ACM Trans. Internet Technol. 2021.
5. N. Choudhury, R. Matam, M. Mukherjee and J. Lloret, "A Beacon and GTS Scheduling Scheme for IEEE 802.15.4 DSME Networks," in IEEE Internet of Things Journal, vol. 9, no. 7, pp. 5162-5172, 1 April, 2022.
6. A. Islam, A. Debnath, M. Ghose, S. Chakraborty, "A Survey on Task Offloading in Multi-access Edge Computing", Journal of Systems Architecture, September 2021.
7. I. Kalita and M. Roy, "Class-Wise Subspace Alignment-Based Unsupervised Adaptive Land Cover Classification in Scene-Level Using Deep Siamese Network," in IEEE Transactions on Neural Networks and Learning Systems, February, 2022.
8. I. Kalita, R. N. Sai Kumar and M. Roy, "Deep Learning-Based Cross-Sensor Domain Adaptation Under Active Learning for Land Cover Classification," IEEE Geoscience and Remote Sensing Letters, vol. 19, pp. 1-5, 2022.



9. Deepak Puthal, Srinibas Swain and Saraju P. Mohanty, Towards next generation robust cryptosystems. IEEE Consumer Electronics Magazine, 2021.
10. Parashjyoti Borah and Deepak Gupta, "Affinity and transformed class probability-based fuzzy least squares support vector machines", Fuzzy Sets and Systems, (17th March) 2022.
11. Richa Sharma, Chandan Kumar, Ferdous A Barbhuiya, "MACFI: A multi-authority access control scheme with efficient ciphertext and secret key size for fog-enhanced IoT" Journal of Systems Architecture (JSA), vol 123, pp 102347, Dec 2021
12. Nurzaman Ahmed, Debasish De, Ferdous A Barbhuiya, Mumammad I Hussain, "MAC Protocols for IEEE 802.11 ah-based Internet of Things: A Survey" Internet of Things Journal, Vol 9, Issue 2, Jan 2022, pp 916-938, Jan 2022.
13. Nazatul Haque Sultan, Nesrine Kaaniche, Maryline Laurent, Ferdous A Barbhuiya, "Authorized Keyword Search over Outsourced Encrypted Data in Cloud Environment" IEEE Transactions on Cloud Computing (TCC), vol 10, issue 1, pp 216-233, Mar 2022.

### Conference Publications:

1. Sudip Biswas, Umesh Singh, and Kaustuv Nag. "Multi-Layer Perceptron-based Beamformer Design for Next-Generation Full-Duplex Cellular Systems." In 2021 IEEE/ACIS 22nd International Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (SNPD), pp. 49-55. IEEE, 2021.
2. Ayushman Singh, and Kaustuv Nag. "Structure-Preserving Deep Autoencoder-based Dimensionality Reduction for Data Visualization." In 2021 IEEE/ACIS 22nd International Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (SNPD), pp. 43-48. IEEE, 2021.
3. Sumit Mishra, Sanjay Moulik, and Ved Prakash. "Invalid Scenarios of External Cluster Validity Indices: An Analysis Using Bell Polynomial". In 2021 IEEE International Conference on Systems, Man, and Cybernetics (SMC 2021), pp. 2215-2220, 2021.
4. Sumit Mishra, and Ved Prakash. "Time Complexity Analysis of the Deductive Sort in the Best Case". In 2021 Genetic and Evolutionary Computation Conference, Companion (GECCO'2021), pp. 337-338, 2021.
5. Sumit Mishra, Ved Prakash, and Maxim Buzdalov. "Labeling-oriented Non-dominated Sorting is  $\Theta(MN^3)$ ". In 2021 Genetic and Evolutionary Computation Conference, Companion (GECCO'2021), pp. 189-190, 2021.
6. Sumit Mishra, Srinibas Swain, Sangita Sarmah, and Carlos A. Coello Coello. "Hypervolume by Slicing Objective Algorithm: An Improved Version". In



- 2021 IEEE Congress on Evolutionary Computation (CEC 2021), pp. 2451-2458, 2021.
7. Achal Dixit and Soumi Chattopadhyay, "Demystifying Heart Failure with Mid-Range Ejection Fraction Using Machine Learning," *Computing in Cardiology (CinC)*, 2021, pp. 1-4, 2021.
  8. Yanshul Sharma and Sanjay Moulik, "SMART-EDF: An EDF based semi-partitioned energy-aware multicore scheduler for real-time systems," *IEEE Region 10 Conference (TENCON)*, 2021.
  9. Kalyanee Devi and Rohit Tripathi, "An LTIRS Model for Influence Diffusion Process," *2022 14th International Conference on COMMunication Systems & NETWORKS (COMSNETS)*, 2022, pp. 285-289.
  10. Kalyanee Devi and Rohit Tripathi, "Efficient Seed Selection for IC-IS Multiphase Diffusion Model," *2021 IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS)*, 2021.
  11. Linjie Gu, Zhe Yang, Mithun Mukherjee, Zhigeng Pan, Mian Guo, Xiushan Liu, Rakesh Matam, and Jaime Lloret. 2021. HAWK-i: a remote and lightweight thermal imaging-based crowd screening framework. In *Proceedings of the 27th Annual International Conference on Mobile Computing and Networking (MobiCom '21)*, 885–887.
  12. N. Chauhan, A. Bansal and R. Matam, "Dynamic Virtual Machine Allocation to Minimise Task Migrations in Cloud," *2021 4th International Conference on Recent Developments in Control, Automation & Power Engineering (RDCAPE)*, 2021, pp. 474-479.
  13. M. Alam, N. Ahmed, R. Matam and F. A. Barbhuiya, "ioFog: Prediction-based Fog Computing Architecture for Offline IoT," *2021 International Wireless Communications and Mobile Computing (IWCMC)*, 2021, pp. 1387-1392.
  14. Hazarika, B., Matam, R., Tripathy, S. "Multiple RPL Objective Functions for Heterogeneous IoT Networks". In: Barolli, L., Woungang, I., Enokido, T. (eds) *Advanced Information Networking and Applications. AINA 2021. Lecture Notes in Networks and Systems*, vol 227. Springer, Cham, 2021.
  15. A. Kumar, R. Matam and M. Mukherjee, "Time Optimal Concurrent Data collection Trees for IoT Applications," *2021 IEEE International Systems Conference (SysCon)*, 2021, pp. 1-7.
  16. Sukapuram, R., Patowary, R. and Barua, G., Loss-freedom, Order-preservation and No-buffering: Pick Any Two During Flow Migration in Network Functions. In *2021 IEEE 29th International Conference on Network Protocols (ICNP)* (pp. 1-11), November 2021.
  17. Sukapuram, R., Path-agnostic network measurements using distributed sketches. In *TENCON 2021-2021 IEEE Region 10 Conference (TENCON)* (pp. 23-28). IEEE, December 2021.
  18. S. Marjit, U. Talukdar and S. M. Hazarika, "EEG-Based Emotion Recognition Using Genetic Algorithm Optimized Multi-Layer Perceptron," *2021*

- International Symposium of Asian Control Association on Intelligent Robotics and Industrial Automation (IRIA), pp. 304-309, 2021.
19. Sumit Mishra, Srinibas Swain, Sangita Sarmah, and Carlos A. Coello Coello. "Hypervolume by Slicing Objective Algorithm: An Improved Version". In 2021 IEEE Congress on Evolutionary Computation (CEC 2021), pp. 2451-2458, 2021.
  20. M. Ghose, Hemangee K. Kapoor, "WeiSub: Weighted Subset-based Cache Replacement Policy for Last Level Caches," in The 12th International Conference on Computing, Communication and Networking Technologies (ICCCNT 2021), Jul 2021.
  21. S. Chakraborty, N. Agarwal, M. Roy, "A Deep Semi-supervised Approach for Multi-label Land-Cover Classification Under Scarcity of Labelled Images". In: Tiwari, A., Ahuja, K., Yadav, A., Bansal, J.C., Deep, K., Nagar, A.K. (eds), *Soft Computing for Problem Solving. Advances in Intelligent Systems and Computing*, vol 1393. Springer, Singapore, October, 2021.
  22. Seema Nagar, Achintya Shankhdhar, Ferdous A. Barbhuiya, Kuntal Dey, "Affect Classification in Tweets using Multitask Deep Neural Networks", The Web Conference (WWW) 2021, pp 516-520, ACM, 2021.
  23. Mehbub Alam, Nurzaman Ahmed, Rakesh Matam, Ferdous A. Barbhuiya, "ioFog: Prediction-based Fog Computing Architecture for Offline IoT", International Wireless Communications and Mobile Computing (IWCMC) 2021, pp 1387-1392, IEEE, 2021.
  24. Seema Nagar, Sameer Gupta, CS Bahushruth, Ferdous A. Barbhuiya, Kuntal Dey, "Homophily-a Driving Factor for Hate Speech on Twitter", International Conference on Complex Networks and Their Applications 2021, pp 78-88, Springer, 2021.
  25. Seema Nagar, Sameer Gupta, CS Bahushruth, Ferdous A. Barbhuiya, Kuntal Dey, "Hate Speech Detection on Social Media Using Graph Convolutional Networks" International Conference on Complex Networks and Their Applications 2021, pp 3-14, Springer, 2021.
  26. Richa Sarma, Ferdous A Barbhuiya, "MOFIT: An Efficient Access Control Scheme with Attribute Merging and Outsourcing Capability for Fog-Enhanced IoT", International Conference on Parallel and Distributed Computing: Applications and Technologies 2021, pp-523-535, 2021.
  27. Seema Nagar, Sameer Gupta, Ferdous A. Barbhuiya, Kuntal Dey, "Capturing the Spread of Hate on Twitter Using Spreading Activation Models" International Conference on Complex Networks and Their Applications 2021, pp 15-27, Springer, 2021.
  28. Mou Dutta, Subhasish Dhal, "GDPR-Compliant Data Management Protocol: A Scalable Solution", in Proceedings of the IEEE COMSNETS 2022, IEEE Explore, pp. 256-259, January 2022, DOI: 10.1109/COMSNETS53615.2022.9667791.



29. Bhabesh Mali, Subhasish Dhal, Ananta Kumar Das, "Diagnosis of Asthma in Children Based on Symptoms: A Machine Learning Approach", in Proceedings of the IEEE Region 10 Conference (IEEE TENCON), IEEE Explore, pp. 782-787, December 2021
30. Naosekham, Veronica, Ailneni Sai Shishir, and Nilkanta Sahu. "Scene Text Recognition with Orientation Rectification via IC-STN." 2021 IEEE REGION 10 CONFERENCE (TENCON). IEEE, December 2021.
31. Naosekham, Veronica, Sushant Aggarwal, and Nilkanta Sahu. "UTextNet : A UNet based Arbitrary shaped Scene Text Detector." 21th International Conference on Intelligent Systems Design and Application, March 2022.
32. Sen, Prithwish, Anindita Das, and Nilkanta Sahu. "Rendering scenes for simulating adverse weather conditions." In International Work-Conference on Artificial Neural Networks, pp. 347-358. Springer, Cham, 2021.
33. Das, Anindita, Prithwish Sen, and Nilkanta Sahu. "Adaptive Style Transfer Using SISR." In International Conference on Computer Analysis of Images and Patterns, pp. 352-361. Springer, Cham, 2021.
34. Prithwish Sen, Anindita Das, Nilkanta Sahu, "Object Detection In Foggy Weather Conditions", International Conference on Intelligent Computing and Optimization (ICO'2021), Dec 2021.
35. Sen, Prithwish, Anindita Das, and Nilkanta Sahu. "End-to-End Scene Text Recognition System for Devanagari and Bengali Text." International Conference on Intelligent Computing & Optimization. Springer, Cham, 2021.

### **Tutorials:**

1. S. Chakraborty and R. Sukapuram, Multi-Access Edge Computing for Urban Informatics. In 23<sup>rd</sup> International Conference on Distributed Computing and Networking (pp. 225-228). <https://doi.org/10.1145/3491003.3493332>, January 2022.

### **Book Chapters:**

1. Yanshul Sharma, Zinea Das, and Sanjay Moulik, TEFRED: A Temperature and Energy Cognizant Fault-Tolerant Real-Time Scheduler Based on Deadline Partitioning for Heterogeneous Platforms. In: et al. Parallel and Distributed Computing, Applications and Technologies. Lecture Notes in Computer Science, vol 13148. Springer, Cham, March 2022.
2. Manojit Ghose has co-authored the book "An Introduction to Computer Science", a textbook on Computer Science for class IX under Board of Secondary Education Assam (SEBA), published by Assam State Textbook Production and Publication Ltd, Govt. of Assam in May 2021.



## Invited Talks:

1. Kaustuv Nag delivered a talk on "A Special Lecture on Generative Adversarial Networks" in Winter School on Deep Learning 2022 (WSDL 2022), March 12, 2022, Indian Statistical Institute Kolkata.
2. Kaustuv Nag delivered an expert talk on "Generative Adversarial Networks" in AICTE Training and Learning (ATAL) Academy sponsored Faculty Development Programme on Advanced Statistical & Machine Learning Models (ASMLM-2021), December 19, 2021, Indian Institute of Information Technology Ranchi.
3. Rakesh Matam delivered a talk on "Medical Devices Security" in AICTE Training and Learning (ATAL) Academy sponsored Faculty Development Programme on Telemedicine, August 11, 2021, NIT Jamshedpur.
4. Rakesh Matam delivered a talk on "Security and Privacy in IoT: Research Challenges" in AICTE Training and Learning (ATAL) Academy sponsored Faculty Development Programme on Cybersecurity and Cryptography: Trends and Technologies, October 8, 2021, IIITDM Kancheepuram.
5. Rakesh Matam delivered a talk on "Security and Privacy in IoT: Research Challenges" in AICTE Training and Learning (ATAL) Academy sponsored Faculty Development Programme on Internet of Things and Its Applications, October 11, 2021, Gujarat Technical University.
6. Rakesh Matam delivered a session talk on "Security and Privacy Cloud and Fog Computing" in International Conference on Advances in Computer Engineering and Communication Systems, August 13, 2021, VNRVJIE, Hyderabad, India.
7. Rakesh Matam delivered a talk on "Security and Privacy in IoT" in ONLINE AICTE Sponsored QIP Short Term Course (STC) on "Cyber Security for Next Generation Technologies: Challenges and Solutions", March 11, 2021, IIITDM Kancheepuram.
8. Upasana Talukdar delivered a talk on "Adaptive MI-EEG BCI: Unsupervised adaptation of CSP tracking Mental Fatigue" in the tutorial session "Artificial Intelligence Augmented Robotic Neurorehabilitation" during 18th IEEE India Council International Conference (INDICON-2021), December 19, 2021, IIT Guwahati.
9. Upasana Talukdar delivered a talk on "Machine Learning in EEG-Based Brain Computer Interfacing: Trends and Prospects" in online Short - Term Course (STC) on "Data Science and its Applications", December 16, 2021, IIIT Bhagalpur.
10. Upasana Talukdar delivered a talk on "Deep Learning in EEG-Based Brain Computer Interfacing: Trends and Prospects" in online AICTE sponsored Short - Term Training Program (STTP) on "Recent Advancement in AI and Machine Learning", October 6, 2021, Kaziranga University, Assam.
11. Manojit Ghose delivered a talk on "Resource management in cloud computing" in AICTE-ISTE sponsored online one-week Faculty



- Development Programme on “Recent Trends in Cloud Computing”, September 9, 2021, DRIEMS Autonomous Engineering College, Odisha.
12. Srinibas Swain delivered a talk on “Most Frequent Connected Induced Subgraph of special classes of graphs” (via Zoom), at the Department of Computer Science, Seattle University, USA on 16 April, 2021.
  13. Srinibas Swain delivered an invited talk on “Graph theoretic encryption” via Zoom at School of Electrical Engineering and Computer Science, Khalifa University, Abu Dhabi, UAE on 25 February, 2022.
  14. Parashjyoti Borah delivered an invited talk on “Shallow Learning Non-Iterative Feed-Forward Neural Networks” in a virtual webinar organised by Department of Computer Science & Engineering, Siksha ‘O’ Anusandhan Deemed to Be University, Bhubaneswar on the 5th March, 2022.
  15. Ferdous A Barbhuiya delivered a talk on "Cloud Computing with AWS", in STTP on Cloud Computing from 6-09-2021 to 12-09-2021 by DRIEMS Autonomous Engineering College under AICTE-ISTE sponsorship.
  16. Ferdous A Barbhuiya delivered a talk on "Internet of Things Architecture and Protocol" in Faculty Development Program on "Internet on Things and its applications" by Gujarat Technological University sponsored by AICTE Training and Learning Academy – ATAL.
  17. Ferdous A Barbhuiya delivered a talk on "Cybersecurity for IT and OT Systems" in Staff training program of North Eastern Regional Load Despatch Centre, Shillong.
  18. Ferdous A Barbhuiya delivered a talk on "Secure Smart Contract" in Faculty Development Program on "Blockchain Security" organised by Indian Institute of Information Technology Guwahati sponsored by AICTE Training and Learning Academy – ATAL.
  19. Ferdous A Barbhuiya delivered a talk on "Online Training on ICT Applications in Office Automation for Rural Development” at NIRDPR- NERC, Guwahati during August 23-27, 2021.
  20. Ferdous A Barbhuiya delivered a talk on "Network Attacks and Countermeasures", in the training program of on "SCADA & Cyber Security" by National Power Training Institute-NER, Guwahati during 10th & 11th Feb. 2022.
  21. Ferdous A Barbhuiya delivered a talk on "Internet of Thing's Security" in the Joint Faculty Development Program of EICT academies (IIT Guwahati, IIITDM Jabalpur, NIT Patna, MNIT Jaipur & IIT Roorkee), on " IoT & Applications (Smart Systems)” during 14 – 25 Feb, 2022.
  22. Ferdous A Barbhuiya delivered a talk on "Security Issues in Internet of Things" in short-term training program on Emerging Information and Cyber Security Trends" organized by NIT Arunachal Pradesh during 21 - 25 March 2022.
  23. Debashree Devi delivered a talk on “Artificial Neural Network” in online AICTE sponsored Short - Term Training Program (STTP) on “Recent

Advancement in AI and Machine Learning”, October 6, 2021, Kaziranga University, Assam.

24. Gautam Barua delivered the Convocation Address at the Nineteenth Convocation of Dibrugarh University on 23<sup>rd</sup> April 2021.
25. Gautam Barua delivered a talk on “Research, Innovation and Ranking” at IIT Kurnool (via Zoom) on 21<sup>st</sup> August 2021.
26. Gautam Barua delivered a talk on “Blockchains” at Royal Global University on 23<sup>rd</sup> November 2021.

#### **Participation in National Level Committees:**

1. Dr. Ferdous Ahmed Barbhuiya was a member of the Working Group (WG) on “Mobile Device Security” for the realisation of the mission set forth by the Ministry of Electronics and Information Technology (MeitY), Government of India.
2. Professor Gautam Barua was a member of the Joint Admissions Board (JAB) of the JEE-Main entrance examination.

#### **Any Others:**

1. Ms. Richa Sarma and Dr Ferdous Ahmed Barbhuiya received the Outstanding Paper Award in the 22nd edition of the International Conference on Parallel and Distributed Computing: Applications and Technologies (PDCAT) 2021 for the paper titled “MOFIT: An Efficient Access Control Scheme with Attribute Merging and Outsourcing Capability for Fog-Enhanced IoT”.
2. World Rank 8 in heuristic track of Parameterized Algorithms and Computational Experiments (PACE) challenge 2021 in general category (World Rank 2 in student category) with Sachin Agarwal, Sahil Bajaj, Ojasv Singh (<https://pacechallenge.org/2021/results/>).
3. World Rank 8 in the exact track of PACE challenge 2021 in the general category with Sachin Agarwal, Sahil Bajaj, Ojasv Singh (<https://pacechallenge.org/2021/results/>).





# **Department of Electronics & Communication Engineering**

## **Faculty:**

1. Dr. Babita Jajodia, Asst. Professor, VLSI and Embedded Systems.
2. Dr. Bidisha Dasgupta, Associate Professor, Antenna Design.
3. Dr. Bijit Kumar Das, Asst. Professor, Signal Processing.
4. Dr. G Aruna, Asst. Professor, Wireless Communication.
5. Dr. Komal Janghel, Asst. Professor, Wireless communication.
6. Dr. Kukil Khanikar, Asst. Professor, Communication Engineering.
7. Dr. Mohd. Mansoor Khan, Asst. Professor, Electrical Machines and Drives, Control Systems, Advanced Instrumentation and Sensors, Opto-Mechanical Sensors, Fiber Optics and Photonics, Fiber Optic Lasers and All Optical Integrated Devices.
8. Dr. Mourina Ghosh, Asst. Professor, VLSI Design.
9. Dr. Rakesh Biswas, Asst. Professor, VLSI Architecture Design for Biomedical Signal and Image processing.
10. Dr. Ripudaman Singh, Asst. Professor, Communication Networks.
11. Dr. Rusha Patra, Asst. Professor, Image Processing, Optical Imaging, Biomedical Optics, Computer Vision.
12. Dr. Sanya Anees, Asst. Professor, Optical Wireless communication, Cooperative communications, and Multiple-input multiple-output (MIMO) systems.
13. Dr. Shilpa, Asst. Professor, Wireless Sensor Networks.
14. Dr. Shovan Barma, Associate. Professor, Biomedical Signal Processing and AI.
15. Dr. Soumyajit Poddar, Asst. Professor, Digital VLSI, Computer Architecture, AI Hardware.
16. Dr. Sounak Roy, Asst. Professor, Analog and mixed signal circuits.
17. Dr. Sudip Biswas, Asst. Professor, Signal Processing and Machine Learning for Future Wireless Communications, Full-Duplex Radios, Communication-Radar Co-existence.
18. Dr. Surajit Panja, Associate Professor, Control of Network Systems, Multi-agent Systems, Opinion Dynamics, Epidemic Propagation Over Networks.

## Publications:

### Patent:

1. Shovan Barma and Sumona Biswas, System and Device for Quality assessment of Vegetables, Indian Patent, Application No.: 20223101795, Filing Date: 28 March 2022.
2. Soumyajit Poddar, Amal Thomas K and Prakash CRJ Naidu, Method for real time surface tracking in unstructured environments, US Patent No.: 20200258237, Accepted: 28 December 2021, Grant Date: 26 April 2022.

### Journal:

1. Anamiya Bhattacharya, Bidisha Dasgupta, and Rajeev Jyoti, "A Simple Frequency Selective Surface Structure for Performance Improvement of Ultra-Wideband Antenna in Frequency and Time Domains," *International Journal of RF-Microwave Computer-Aided Engineering (Wiley)*, vol. 31 (e22857), no. 11, pp. 1-13, Aug. 2021.
2. S. Chatterjee and S. Roy. "A Self Calibration Method of a Pipeline ADC Based on Dynamic Capacitance Allotment". *IEEE Transactions on Very Large Scale Integration (VLSI) Systems*. vol. 30, no. 5, pp. 666-670, Mar 2022, DOI: 10.1109/TVLSI.2022.3151479.
3. Shekhar Suman Borah, Mourina Ghosh, and Ashish Ranjan, "Higher Order Multifunction Filter Using Current Differencing Buffered Amplifier (CDBA)", *Revue Roumaine des Sciences Techniques—Série Électrotechnique et Énergétique*, vol. 67, no. 1, pp. 59–64, 2022.
4. Subhasish Banerjee, Mourina Ghosh, Pulak Mondal, and Ashish Ranjan, "Third order inverse multifunction filter employing MOS resistors and capacitors", *International Journal of Numerical Modelling: Electronic Networks, Devices and Fields (Wiley)*, Mar. 2022, DOI: 10.1002/jnm.3002.
5. Jitumani Sarma and Rakesh Biswas, "A VLSI-Based Hybrid ECG Compression Scheme for Wearable Sensor Node," *IEEE Sensors Letters*, vol. 6, no. 4, pp. 1-4, Apr. 2022.
6. Subhasish Banerjee, Pulak Mondal and Mourina Ghosh, "Realization of A Reconfigurable Butterworth and Bessel Filter Using Single Operational Transresistance Amplifier and Study of Their Performance", *International Journal of Numerical Modelling: Electronic Networks, Devices and Fields (Wiley)*, Jan. 2022, DOI: 10.1002/jnm.2987.
7. Subhasish Banerjee, Mourina Ghosh, Pulak Mondal and Bal Chand Nagar, "New Multi-function Third-Order Inverse Filter using OTRAs", *Journal of The Institution of Engineers (India): Series B* (2021), Oct. 2022, DOI: 10.1007/s40031-021-00687-2.
8. Mourina Ghosh, Ankur Sd Singh, Shekhar Suman Borah, John Vista, Ashish Ranjan, and Santosh Kumar, "MOSFET-Based Memristor for High-Frequency Signal Processing", *IEEE Transactions on Electron Devices*, Mar. 2022. DOI: 10.1109/TED.2022.3160940.

9. Sumona Biswas and Shovan Barma, "A Large-Scale Fully Annotated Low-Cost Microscopy Dataset for Deep Learning Framework," *IEEE Transactions on NanoBioscience*, vol. 20, no. 4, pp. 507–515, Oct. 2021.
10. Anand Shankar, Hnin Kay Khaing, Samarendra Dandapat, and Shovan Barma, "Analysis of Epileptic Seizures Based on EEG Using Recurrence Plot Images and Deep Learning," *Biomedical Signal Processing and Control* (Elsevier), vol. 69, pp. 102854. Aug. 2021.
11. Parthana Sarma and Shovan Barma, "Usefulness of Blinking Duration Variability (BDV) in Discriminating Emotional States," *Biomedical Signal Processing and Control* (Elsevier), vol. 69, pp. 102883. Aug. 2021.
12. Parthana Sarma and Shovan Barma, "Emotion Recognition by Distinguishing Appropriate EEG Segments Based on Random Matrix Theory," *Biomedical Signal Processing and Control* (Elsevier) vol. 70, pp. 102991. Sep. 2021.
13. Parthana Sarma and Shovan Barma, "Emotion Recognition by Discriminating EEG Segments With High Affective Content From Automatically Selected Relevant Channels," *IEEE Transactions on Instrumentation & Measurement*, vol. 71, ASN. 4000812 Jan. 2022. DOI: 10.1109/TIM.2022.3147876.
14. Jia Wen Li, Shovan Barma, Peng Un Mak, Fei Chen, Cheng Li, Ming Tao Li, Mang I Vai, and Sio Hang Pun "Single-channel Selection for EEG-based Emotion Recognition Using Brain Rhythm Sequencing," *IEEE Journal of Biomedical and Health Informatics*, Feb. 2022. DOI: 10.1109/JBHI.2022.3148109.
15. Jia Wen Li, Shovan Barma, Peng Un Mak, Mang I Vai, and Sio Hang Pun "Emotion Recognition Based on EEG Brain Rhythm Sequencing Technique," *IEEE Transactions on Cognitive and Developmental Systems*, Feb. 2022. DOI: 10.1109/TCDS.2022.3149953.
16. Anand Shankar, Samarendra Dandapat, and Shovan Barma " Seizure Types Classification by Generating Input Images With In-Depth Features From Decomposed EEG Signals For Deep Learning Pipeline," *IEEE Journal of Biomedical and Health Informatics*, Mar. 2022. DOI: 10.1109/JBHI.2022.3159531
17. Anand Jee, Komal Janghel and Shankar Prakriya, "Performance of Adaptive Multi-User Underlay NOMA Transmission With Simple User Selection," in *IEEE Transactions on Cognitive Communications and Networking*, Jan. 2022. DOI: 10.1109/TCCN.2022.3142136.
18. Prasenjit Maji, Hemanta Kumar Mondal, Arka Prava Roy, Soumyajit Poddar and Saraju P Mohanty, "iKardo: An Intelligent ECG Device for Automatic Critical Beat Identification for Smart Healthcare" in *IEEE Transactions on Consumer Electronics*, vol. 67, no. 4, Nov. 2021, DOI: 10.1109/TCE.2021.3129316.
19. Anakhi Hazarika, Soumyajit Poddar, Moustafa M Nasralla and Hafizur Rahaman, "Area and energy efficient shift and accumulator unit for



- object detection in IoT applications", in Elsevier Alexandria Engineering Journal, 2022. DOI: 10.1016/j.aej.2021.04.099.
20. Anakhi Hazarika, Soumyajit Poddar and Hafizur Rahaman, "High Performance Kernel Architecture for Convolutional Neural Network Acceleration", in World Scientific Journal of Circuits, Systems and Computers, vol. 3, no. 15, pp. 2150266 May 2021. DOI: 10.1142/S0218126621502662.
  21. V. Sharma, J. Yaswanth, S. K. Singh, S. Biswas, K. Singh and F. Khan, "A Pricing-Based Approach for Energy-Efficiency Maximization in RIS-Aided Multi-User MIMO SWIPT-Enabled Wireless Networks," in IEEE Access, vol. 10, pp. 29132-29148, Mar. 2022, DOI: 10.1109/ACCESS.2022.3158486.
  22. A. Sirojuddin, V. Nzima, K. Singh, S. Biswas and W. -J. Huang, "Backscatter-Aided Relaying for Next-Generation Wireless Communications With SWIPT," in IEEE Access, vol. 9, pp. 159093-159104, Nov. 2021, DOI: 10.1109/ACCESS.2021.3131211.
  23. H. Albinsaid, K. Singh, S. Biswas and C. -P. Li, "Multi-agent Reinforcement Learning Based Distributed Dynamic Spectrum Access," in IEEE Transactions on Cognitive Communications and Networking, Oct. 2021 DOI: 10.1109/TCCN.2021.3120996.
  24. K. Singh, S. Biswas, M. L. Ku and M. F. Flanagan, "Transceiver Design and Power Control for Full-Duplex Ultra-Reliable Low-Latency Communication Systems," in IEEE Transactions on Wireless Communications, vol. 21, no. 2, pp. 1392-1406, Feb. 2022, DOI: 10.1109/TWC.2021.3103861.
  25. S. Biswas, A. Bishnu, F. A. Khan and T. Ratnarajah, "In-Band Full-Duplex Dynamic Spectrum Sharing in Beyond 5G Networks," in IEEE Communications Magazine, vol. 59, no. 7, pp. 54-60, Jul. 2021, DOI: 10.1109/MCOM.001.2000929.
  26. H. Albinsaid, K. Singh, A. Bansal, S. Biswas, C. -P. Li and Z. J. Haas, "Multiple Antenna Selection and Successive Signal Detection for SM-Based IRS-Aided Communication," in IEEE Signal Processing Letters, vol. 28, pp. 813-817, 2021, doi: 10.1109/LSP.2021.3071981.
  27. T. Zhang, S. Biswas and T. Ratnarajah, "Performance Analysis on Cache-Enabled FR2 IAB Networks," IEEE Access, vol. 9, pp. 63521-63537, 2021, doi: 10.1109/ACCESS.2021.3071355.

#### Conference:

1. Anett Antony, Bidisha Dasgupta, "Lotus Shaped Printed Antenna for UWB Applications," IEEE 18th India Council International Conference (INDICON), Guwahati, India, 19-21 December 2021.
2. Divyanshu Bhardwaj, Anamiya Bhattacharya and Bidisha Dasgupta, "A Compact Reconfigurable Slot-Loaded Printed Antenna for Future Wireless Applications," Twenty Seventh National Conference on Communications (NCC-2021), Virtual Conference, 27-30 July 2021.

3. Palak Yash, Mansi Thakare and Babita Jajodia, "Optimized Hardware Implementation of Vedic Binary Multiplier using Nikhilam Sutra on FPGA", in 2022 IEEE 13th Latin American Symposium on Circuits and Systems (LASCAS), Puerto Varas, Chile, 1-4 March, 2022.
4. Simran Jakhodia and Babita Jajodia, "Numerical Methods for Solving High-Order Mathematical Problems Using Quantum Linear System Algorithm on IBM QISKit Platform", in 2022 IEEE 3rd International Conference on Innovative Trends in Information Technology (ICITIT), Virtual Mode, 12-13 February, 2022.
5. Jasmine Bajaj and Babita Jajodia, "Efficient Hardware Implementation of High-Speed Recursive Vedic Squaring Architecture on FPGA", in 2021 IEEE International Conference on Electrical, Computer and Energy Technologies (ICECET), Cape Town, South Africa, 9-10 December, 2021.
6. Mansi Thakare, Palak Yash, Debaleena Chakraborty and Babita Jajodia, "Efficient Hardware Implementation of Cube Architecture using Yavadunam Sutra on FPGA," in 2021 IEEE 64th International Midwest Symposium on Circuits and Systems (MWSCAS), Virtual Mode, 9-11 August 2021.
7. Jasmine Bajaj and Babita Jajodia, "Squaring Technique using Vedic Mathematics," in 2021 Proceedings of International Conference on Women Researchers in Electronics and Computing (WREC), AIJR Proceedings, Virtual Mode, 22 -24 April 2021.
8. Ritu Thombre and Babita Jajodia, "Experimental Analysis of Attacks on RSA & Rabin Cryptosystems using Quantum Shor's Algorithm," in 2021 Proceedings of International Conference on Women Researchers in Electronics and Computing (WREC), AIJR Proceedings, Virtual Mode, 22-24 April 2021.
9. Piklu Mallick, Sourav Bhowmick, and Surajit Panja, "Prediction of COVID-19 Infected Population for Indian States through a State Interaction Network-based SEIR Epidemic Model," 7th International Conference on Advances in Control & Optimization of Dynamical Systems (ACODS), NIT Silchar, India, 22-25 February, 2022.
10. Sourav Bhowmick, Bonty Halo, and Surajit Panja, "Bipartite Consensus Control of Multi-agent Systems Under Multiple Denial-of-Service Cyber Attacks," 7th International Conference on Advances in Control & Optimization of Dynamical Systems (ACODS), NIT Silchar, India, 22-25 February, 2022.
11. Piklu Mallick, Sourav Bhowmick, and Surajit Panja, "Analysis of Imposition and Periodic Relaxation of Lockdown on the Spread of COVID-19 in India through Networked SEIR Model," 7th Indian Control Conference (ICC), IIT Bombay, India 20-22 December, 2021.
12. Sabyasachi Bhattacharyya and G.Aruna, "Minimally Equicorrelated MIMO Modelling for NLOS MM Wave Performance Improvement", IEEE

Wireless telecommunication Symposium, 6-8 April 2022, California USA, IEEE WTS proceedings.

13. U. Bhuyan and S. Rao, "Performance Analysis of Three User Cooperative NOMA," TENCON 2021, pp. 57-62, 7-10 December 2021, Auckland, New Zealand (Virtual Mode).
14. Shatadal Chatterjee, Maryaradhiya Daimari, and Sounak Roy. "A Fully Digital Foreground Calibration Technique of A Flash ADC" in IEEE Computer Society Annual Symposium on VLSI (ISVLSI) 2021, 7-9 Jul. 2021, Tampa, FL, USA.
15. A. Baba and R. Biswas, "Multiplier-less Lifting-based Photo Core Transform for JPEG XR Ultrasound Image Compression," 2nd International Conference for Emerging Technology (INCET), 21-23 May 2021, pp. 1-6.
16. A. Baba and R. Biswas, "Pipeline Architecture of Forward and Inverse Photo Core Transform for JPEG XR Image Compression," International Conference on Intelligent Technologies (CONIT), 25-27 June 2021, pp. 1-5.
17. Ankur Singh, Shekhar Suman Borah, and Mourina Ghosh, "Simple Grounded Meminductor Emulator using Transconductance Amplifier", 2021 IEEE International Midwest Symposium on Circuits and Systems (MWSCAS), Lansing, MI, USA, 9-11 August. 2021.
18. Ankur Singh, Shekhar Suman Borah, and Mourina Ghosh; Pulak Mondal, "Low-Power High-Speed 8-bit Conditional Carry Adder (CCA) using Memristor Logic", 2021 4th International Conference on Circuits, Systems and Simulation (ICCS), Kuala Lumpur, Malaysia, 26-28 May 2021.
19. Subhasish Banerjee; Pulak Mondal; Mourina Ghosh, "Performance Analysis of Single Operational Transresistance Amplifier Based Bandpass Filter and Bandreject Filter", 2021 Devices for Integrated Circuit (DevIC), Kalyani, India, 19-20 May 2021.
20. Jia Wen Li, Shovan Barma, Sio Hang Pun, Mang I Vai, Feng Wan, Wai Sun Liu and Peng Un Mak, "Brain Rhythm Sequencing and Its Application for EEG-based Emotion Recognition," 2021 IEEE International Conference on Computational Intelligence and Virtual Environments for Measurement Systems and Applications (CIVEMSA) (CIVEMSA 2021), Virtual, June 18-21, 2021.
21. Jia Wen Li, Shovan Barma, Sio Hang Pun, Fei Chen, Cheng Li, Ming Tao Li, Pan Ke Wang, Mang I Vai, and Peng Un Mak, "EEG-based Emotion Recognition Using Similarity Measure of Brain Rhythm Sequencing" 43rd IEEE Conference on Engineering in Medicine and Biology Conference (EMBC 2021), Virtual, Nov. 1-5, 2021.
22. Anand Shankar, Samarendra Dandapat, Shovan Barma "Classification of Epileptic Seizure From EEG Signal Based on Hilbert Vibration Decomposition and Deep Learning," 43rd IEEE Conference on Engineering in Medicine and Biology Conference (EMBC 2021), Nov. 1-5, 2021 Virtual.



23. Anand Shankar, Samarendra Dandapat, Shovan Barma "Seizure Type Classification Using EEG Based on Gramian Angular Field Transformation and Deep Learning," 43rd IEEE Conference on Engineering in Medicine and Biology Conference (EMBC 2021), Virtual, 1-5, November, 2021.
24. Anand Shankar, Samarendra Dandapat, Shovan Barma "Classification of Seizure Types Based on Statistical Variants and Machine Learning," IEEE INDICON21, 19-21 December 2021.
25. Atharv Dabhade, Samshitha Roy, Marwa S Moustafa, Sayed A. Mohamed, Reda El Gendy, Shovan Barma, "Extreme Weather Event (Cyclone) Detection in India Using Advanced Deep Learning Techniques," in 9th IEEE International Conference on Orange Technology (ICOT), in Tainan, Taiwan. 16-17 December 2021.
26. Alokijwal Das, Dipamani Pathak, Kukil Khanikar "Analysis of Probability of Collision of CAMs in Opportunistic Vehicular Communication," IEEE ANTS, 13-16 December, 2021.
27. Bondita Paul and Rusha Patra, "Parametric reconstruction of photoacoustic tomographic imaging using gaussian mixture model and evolutionary methods," IEEE International Conference on Intelligent Technologies (CONIT), 25-27 June, 2021.
28. Aditya Jolly, Sudip Biswas, Keshav Singh, "An analysis on rate-splitting multiple access for IRS aided 6G communication," 2021 IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS), 13-16 December, 2021, arXiv preprint arXiv:2106.04418, 2021.
29. S. Biswas, U. Singh and K. Nag, "Multi-Layer Perceptron-based Beamformer Design for Next-Generation Full-Duplex Cellular Systems," 2021 IEEE/ACIS 22nd International Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (SNPD), 24-26 November 2021, pp. 49-55. 8 April 2022, Pomona, California, U

### **Book Chapter:**

1. Divyanshu Singh, Simran Jakhodia and Babita Jajodia, "Experimental Evaluation of Adder Circuits on IBM QX Hardware" In: Smys S., Balas V.E., Palanisamy R. (eds) Inventive Computation and Information Technologies. Lecture Notes in Networks and Systems, vol 336. pp. 333-347, Springer, Singapore, 01st January 2022, Print ISBN: 978-981-16-6722-0, Online ISBN: 978-981-16-6723-7, 2022.

### **Workshop/Talk Organized:**

1. Workshop organized on "Online Technical Session on VLSI and Embedded Systems" at IIIT Guwahati in association with CoreEL Technologies, Bangalore, Karnataka, India, 20 August 2021, Coordinated by Rakesh Biswas and Babita Jajodia.
2. Online Technical Session on "Design and Prototype FPGA and SoC Systems using MATLAB & Simulink" at IIIT Guwahati in association with MathWorks India Private Limited, 4th March 2022, Coordinated by Babita Jajodia.

## Invited Talk:

1. Babita Jajodia delivered a talk on “Towards VLSI Design and Implementation of DSP Applications” in Five-Day Online Short-Term Training Programme on “Circuit Design, Simulation and Analysis (eSim, Skywater 130nm PDK)”, jointly by Department of Electronics and Communication Engineering of School of Technology, Assam Don Bosco University and VLSI System Design, Bangalore, India, 27 September –1 October 2021.
2. Babita Jajodia delivered a talk on “Quantum Computing in the Abstract” in Five-Day Online AICTE Training and Learning (ATAL) Faculty Development Programme on Quantum Computing, jointly by ATAL Academy and Department of Electronics and Communication Engineering, GUIST, Gauhati University, Assam, India, 25-29 October 2021.
3. Babita Jajodia delivered a talk on “Transceiver Design for IEEE 802.15.6 Wireless Body Area Network System” Five-Day Online AICTE Training and Learning (ATAL) Faculty Development Programme on Design of Low Power Analog Integrated Circuits, jointly by ATAL Academy and Department of Electronics and Communication Engineering, GUIST, Gauhati University, Assam, India, 29 November – 3 December 2021
4. Babita Jajodia delivered a talk on “Basics of Quantum Computing” in Online One-Week Lecture Series-I, organized by Deptt. of Electronics and Telecommunication Engineering, Assam Engineering College, Guwahati in association with Deptt. of Electronics and Communication Engineering, GUIST, Gauhati University, Assam, India, 24–29 January 2022.
5. Surajit Panja delivered a talk on “Epidemic Spreading Dynamics: Modelling, Control Analysis, and Applications” in One-week online Short Term Course (STC) on “Modeling and Identification of Physiological Systems (MIPS-2021)” organised by Department of Instrumentation and Control Engineering, Dr. B. R. Ambedkar NIT Jalandhar, Punjab, India, 20th-24th October, 2021.
6. Surajit Panja delivered a talk on “Multi-agent Systems and its Various Facets” in One-week online SERB-funded workshop on “Intelligent Control and Protection Techniques of Hybrid Microgrid (ICPT 2022)” organized by the Department of Electrical Engineering, MNNIT Allahabad, Prayagraj, India, 5th-9th March, 2022.
7. Mourina Ghosh delivered a talk on “Design of Memristor Using Current Mode Circuits” in One-week short term program under NEP 2020 on “Analog Circuit Design Using ORCAD: Hands On Training” in the department of Electronics and Communication Engineering, National Institute of Technology Manipur, India from 30 November – 4 December 2021.
8. Shovan Barma delivered a talk on “Food Quality Assessment Based on Microscopic Image in Advanced Deep Learning Framework” in WUN-ASIA SDG Workshop: Recent Advancements Towards Healthy, Safe and



Sustainable Food and Water Systems, in National Cheng Kung University Tainan, Taiwan on 4 November 2021

9. Rakesh Biswas delivered a talk on “Static Timing Analysis: Importance of Clock Skew in VLSI Physical Design” in Five Day Short Term Training Program (STTP) on “VLSI Architectures for Digital Signal Processing Systems”, (VADSPS-21) conducted by the Department of Electronics and Communication Engineering (ECE) of National Institute of Technology Calicut from 14 – 18 June, 2021.
10. Sudip Biswas delivered a talk on “In-Band Full-Duplex for Next Generation Wireless Communications” in One-week short term course on “Future Opportunities and Challenges in 5G Technology” held during October 13 - 17, 2021, organized by the Department of Electronics and Communication Engineering in association with IEEE Student Chapter of Madanapalle Institute of Technology & Science (MITS), Madanapalle.
11. Sudip Biswas delivered a talk on “In-Band Full-Duplex for Next Generation Wireless Communications” in AICTE Training and Learning (ATAL) Academy Online five days Faculty Development Program on “Architecture and Technologies for 5G and Beyond Wireless Networks” organized by the Department of Electronics Engineering, Indian Institute of Technology (BHU) Varanasi from 16-20 August 2021
12. Sudip Biswas delivered a talk on “Transceiver Design for In-Band Full-Duplex for Beyond 5G Wireless Communications” in AICTE Training and Learning (ATAL) Sponsored Virtual 5-day Faculty Development Programme (FDP) on “Machine Learning Algorithms for 5G Mobile Networks (ML5G)”, organized by Indian Institute of Information Technology Design and Manufacturing Kancheepuram (IIITDM Kancheepuram) from October 4-8, 2021
13. Sudip Biswas delivered a talk on “Data-driven Transceiver Design for Beyond 5G Cellular and IoT Communications” in Online AICTE ISTE SPONSORED INDUCTION/REFRESHER PROGRAM on “Recent trends of Artificial Intelligence for 5G Communication” organized by Electronics and Communication Department, Angadi Institute of Technology & Management, Belagavi from Jan 04 -10, 2022

#### **Other Activities:**

1. Shovan Barma as Session Chair of IEEE International Conference on Orange Technology (ICOT), in Tainan, Taiwan. 16-17 December 2021
2. Sudip Biswas as TPC member for IEEE GLOBECOM 2021 (Selected areas in Communications: Machine Learning for Communications)
3. Sudip Biswas as TPC member for IEEE ICC 2021 (Wireless Communications)

#### **Other Achievements:**

1. Babita Jajodia featured in “IBM's Qiskit Quantum Women of India 2021 Feature Book”.

2. Bidisha Dasgupta has been elevated to the grade of IEEE Senior member in April 2021.
3. Shovan Barma has been appointed as Associate Editor of IEEE Transactions on Instrumentation & Measurement (TIM).
4. Sudip Biswas has been appointed as Editor of IEEE Transactions on Green Communications (TGCN).





# Department of Science and Mathematics

## Faculty:

1. Dr. Gautam Kalita, Associate Professor, Number Theory, Algebra, Cryptography.
2. Dr. Anuradha Jha, Assistant Professor, Numerical Analysis, Singular Perturbation Problems.
3. Dr. Dipendu Maity, Assistant Professor, Topology and Geometry
4. Dr. Shyamal Ghosh, Assistant Professor, Applied Probability, Reliability Theory, Distribution Theory.
5. Dr. Farha Sultana, Assistant Professor, Reliability Theory, Distribution Theory.

## Publications in Journals:

1. D. Bhowmik, **D. Maity**, B. P. Yadav, S. Pathak and A. K. Upadhyay, "Some New Classes of Homological Quantum Codes Associated with Surface Maps", *National Academy Science Letters*, 45, no. 1, 83–86, 2022.
2. D. Bhowmik, **D. Maity** and ED Silva, "Surface codes and color codes associated with non-orientable surfaces", *Quantum Information and Computation*, 21 (13-14), (pp 1135 - 1153), 2021.
3. A. S. Chetry, A. Jana and **G. Kalita**, "Proof of a supercongruence conjecture of Bing He", *Res. Number Theory* 7, Article 21, pp. 8, 2021.
4. B. Datta and **D. Maity**, "Platonic solids, Archimedean solids and semi-equivelar maps on the sphere", *Discrete Math.*, 345 (1), 112652, 2022.
5. A. Jana and **G. Kalita**, "On some conjectural supercongruences for sums involving certain rising factorials", *Results Math.* 76, Article 155, pp. 10, 2021.
6. **A. Jha** and M. K. Kadalbajoo, "Hybrid method for two parameter singularly perturbed elliptic boundary value problems", *Computational and Mathematical Methods*, 3, no. 6, 2021.
7. **G. Kalita** and A. Jana, "On some supercongruence conjectures for truncated hypergeometric series", *Indian J. Pure Appl. Math.* 52, 168-192, 2021.
8. **G. Kalita**, "Another proof of a supercongruence conjecture of Z.-W. Sun", *Proc. Natl. Acad. Sci., India, Sect. A Phys. Sci.* 91 (2), 283-287, 2021.
9. **G. Kalita** and A. Jana, "Certain character sums, Gaussian hypergeometric series, and their connections to algebraic curves", *Finite Fields Appl.* 72, 101832, 2021.

## Publications in Conferences:

1. A. Bhowmik, **D. Maity** and A.K. Upadhyay, "A new class of quantum codes associate with a class of maps", *Proceedings of the Seventh International*

Conference on Mathematics and Computing, Advances in Intelligent Systems and Computing, vol. 1412, 2022.

### Presentation in Conferences:

1. **Gautam Kalita** presented a paper "*On a supercongruence conjecture of Z.-W. Sun*" in the International Conference on Emerging trends in Pure and Applied Mathematics" organized by Department of Applied Sciences, School of Engineering in association with Department of Mathematical Sciences, School of Sciences, Tezpur University, March 12-13, 2022.

### Invited Talk/Outreach Program by Faculty:

1. **Gautam Kalita** delivered a talk titled " *$\pi$ , continued fraction, and irrationality*" on International Day of Mathematics (also known as  $\pi$  day) organized by Department of Mathematics, Assam University, Silchar, March 14, 2022.
2. **Gautam Kalita** was a Resource Person for *MTTS Follow-up course on Linear Algebra* organized by MTTT Trust and National Board of Higher Mathematics, and conducted eight (8) sessions, January 31--February 13, 2022.
3. **Gautam Kalita** worked as an Assisting Mentor in *Online Fundamental Course in Mathematics (OFCM) 2021* organized by MTTT Trust and National Board of Higher Mathematics, September 19--October 10, 2021.
4. **Gautam Kalita** worked as a Mentor in *MTTS Level 0 2021* organized by MTTT Trust and National Board of Higher Mathematics, June 12--July 5, 2021.





# **Department of Humanities & Social Sciences**

## **Faculty:**

1. Dr. Suranjana Barua, Assoc. Professor, Sociolinguistics, Discourse/Conversation Analysis, English Language Teaching, Translation Studies, Gender Studies.
2. Dr. Hari K. Choudhury, Asst. Professor, Issues related to Development Economics, Health Economics and Experimental Economics.
3. Dr. Rajarshi Mitra, Asst. Professor, Colonial and Postcolonial Studies, Colonial Culture, Anglo-Indian novels, Animal Studies, Urban Studies.
4. Dr. L David Lal, Asst. Professor, Politics of Identity, Caste Conflicts, Socio-Political History of Marginalised, Public Policy.
5. Dr. Kaveri Deb, Asst. Professor, International Trade, Development Economics, Applied Econometrics.
6. Dr. Arjab Roy, Asst. Professor, Colonial & Postcolonial Studies, Literature and Cinema, Left Intellectual and Cultural History, Subaltern Studies, Adivasi Studies and Urban Studies.

## **Publications**

### **Publications (Journal)**

1. Barua, Suranjana and Lal, L. David (2021). 'History, Memory and Legend: Contextualizing Joymoti Utsav in Assam'. *Rupkatha Journal on Interdisciplinary Studies in Humanities*. Vol 13, No. 3, 2021, pp. 1-16
  - a. DOI: <https://rupkatha.com/v13n322/>
  - b. Full text: <http://rupkatha.com/V12/n5/rioc1s17n3.pdf>
2. Barua, Suranjana and Lal, L. David. (2021). 'Feminist Consciousness, Empowerment and Identity: Contextualizing Chandraprabha Saikiani in Contemporary Assam' in 7th World Conference on Women's Studies (WCWS 2021) TIHKM Publishing Conference Proceedings (ISSN 2424-6743).
  - a. DOI: <https://doi.org/10.17501/24246743.2021.6101>
  - b. Full text: <https://tiikmpublishing.com/data/conferences/doi/wcws/24246743.2021.6101.pdf>
3. Deb, Kaveri, S. Agrawal and N. Kumari. 2021. "Investigating the Causes for Currency Depreciation in India: A Quantile Regression Approach." *The IUP Journal of Applied Economics*, 20 (3): 28-42.

4. Deb, Kaveri. 2021. "Global Value Chains in India and their Impact on Gender Wage Disparity." *Foreign Trade Review* (Sage), 1-21. DOI: 10.1177/00157325211024003.
5. Lal, L. David. (2021). 'Mapping the Changing Contours of Tribal Politics', *The Book Review* (SAGE), Vol. 45, No. 5, pp. 21-23 (<https://www.thebookreviewindia.org/mapping-the-changing-contours-of-tribal-politics/>) (ISSN NO. 0970-4175 (Print)).
6. Choudhury, H.K. and Borah, R.K. (2022). "Can financial incentives encourage women to participate in a cervical cancer screening programme? Evidence from a randomized controlled trial analysis", *Journal of Cancer Policy*, [doi.org/10.1016/j.jcipo.2022.100324](https://doi.org/10.1016/j.jcipo.2022.100324)

### **Publications (Book Chapters and Conference Proceedings)**

1. Lal, L. David and Barua, Suranjana. (2021). 'Gandhi's Role in India's North-East: Issues of Reform and Integration'. In Swaran Singh and Reena Marwah (Eds.) *Revisiting Gandhi: Legacies for World Peace and National Integration*. World Scientific Publishers, Singapore. pp. 197-222
  - a. <https://doi.org/10.1142/12365>
  - b. <https://www.worldscientific.com/worldscibooks/10.1142/12365>
2. Arjab Roy. "Women and Left Radicalism in India: Feminist Critiques from Within", Book of Conference Proceedings, National Conference, Role of Women in Nation Development, NIT Jamshedpur and Women Institute of Technology Dehradun, 2020, eds. Dr. Prabha Chand, Dr. Kumari Namrata, Dr. Dulari Hansdah, and Dr. Shwati Sudha. Man Tech Publications: Ghaziabad/Delhi, NCR: 209 – 216 (DOI: - <https://doi.org/10.47531/MANTECH.2021.24>) (Web) [ISBN No: 978-81-948050-4-5]
3. Arjab Roy. "Identity Questions and Left Radicalism in West Bengal during the Sixties-Seventies", Conference Proceedings, Unfinished Legacy of Dr. B. R. Ambedkar: Margin Claims Share in the Centre, Margins, Marginality and Marginalization: Alternative Ambedkarite Perspectives, ed. Vislavath Rajunayak, Book Enclave: India, 2022: 42-60. [ISBN No: 978-81-8152-559-8].
4. Mitra, Rajarshi. "Imperial masculinity and racial pacification: 'Martial Bengalis' in the Great War." *After the Armistice*. Routledge, 2021. 58-73.

### **Faculty Talk**

1. Arjab Roy was a Panel Discussant, British Empire and Food Crisis: Two Famines in Bengal and their Literary and Visual Work at the 4th Annual South Asia Conference, Ireland India Institute, Dublin, April 2020. (Virtual).
2. Arjab Roy gave an invited Lecture, "Isolation and Quarantine as Sites of Mass Spectacle in India: Then and Now", Centre for Study of



Contemporary Theory and Research, School of Liberal Arts and Cultural Studies, Adamas University, November 2021. (Virtual)

3. Lal, L. David. invited as an expert consultative meeting of the Nodal Officers of the States and Union Territories for a research study on 'Sustainable Development Goals 4.7: Policies and Practices in School Education' organised by the Planning and Monitoring Division, National Council of Educational Research and Training (NCERT), Delhi on 6-7 January 2022.
4. Lal, L. David. invited as an expert consultative meeting of the Nodal Officers of the States and Union Territories for a research study on 'Sustainable Development Goals 4.7: Policies and Practices in School Education' organised by the Planning and Monitoring Division, National Council of Educational Research and Training (NCERT), Delhi on 7-8th March 2022.
5. Lal, L. David. invited as a resource person and keynote speaker in AICTE-ATAL Faculty Development Program on the theme "ROAD: -Response Effectiveness, Organizing Self, Attitudinal Shift, Decision Making" organised by Girijananda Chowdhury Institute of Pharmaceutical Science (Guwahati, Assam) and AICTE ATAL- FDP, AICTE on 6th December 2021.
6. Lal, L. David. delivered a lecture on "Aam Aadmi Party and Emergence of Alternative Politics in India" at MSW-Community Organisation and Development Practice, Tata Institute of Social Sciences, Guwahati on 16th November 2021.
7. Lal, L. David. delivered a talk on "Covid19 Pandemic, State and its Responses in India", at the Department of Political Science, Rajdhani College, the University of Delhi for a Webinar Series on 'Indian Politics and the Covid19' scheduled on 22nd June 2021.
8. Mitra, Rajarshi. Invited Lecture on "Wanderings of Fanny Parkes: Travel, Life and Death of Imperial Textual Culture", in a virtual Three-day International Conference on Comparative Literature: Frames, Methods & Practice organized by the Dept. of English & Dept. of Marathi, Shreemati Nathibai Damodar Thackersey Women's University & Calcutta Comparatists 1919, March 6, 2022.
9. Choudhury, H.K. Invited Lecture (virtual) on "Regression Analysis" at North Lakhimpur College on 13<sup>th</sup> and 14<sup>th</sup> July 2021

### **Papers presented in Conferences/Seminars**

1. Barua, Suranjana. and Lal, L. David. 2021 'History, Memory and Legend: Contextualizing Joymoti Utsav in Assam'. 1st *Rupkatha International Open Conference on Recent Advances in Interdisciplinary Humanities* held in online mode, 28-30 August, 2021.
2. Barua, Suranjana. and Lal, L. David. (2021) 'Feminist Consciousness, Empowerment and Identity: Contextualizing Chandraprabha Saikiani in

Contemporary Assam' at the 7th World Conference on Women's Studies (WCWS 2021) held in online mode, 20th – 22nd May 2021.

3. Deb, Kaveri. Presented the paper "Portfolio Balance Model and Exchange Rate Determination in India: An ARDL Approach" with Karnikaa Bhattacharyya at the AIB (*Academy of International Business*) South Asia Chapter Conference, held virtually at Indian Institute of Management (IIM) Visakhapatnam, 2022, January 23-25.
4. Lal, L. David. (2022). Presented a research paper on 'Claiming 'Nation' and 'National Movements': Marginalised Historiography of Dalits and Tribals', at the 45th Indian Social Science Congress under Theme 12: Peoples (Dalits, Tribes, Women, Peasants, etc.) Struggles and Movements for Equitable Democratic Society), held on 28-30th March 2022 at Chennai.
5. Lal, L. David. (2021). Presented a research paper on "Caste, No-Caste, Caste: Reading the Madness of Caste Violence in India" in the panel on 'Recovering Caste in International Relations: Challenging Colonial/Brahminical Hegemony' in the International Conference on the 'New Nationalisms in an Open World: 26th World Congress of Political Science' organized by International Political Science Association, Greece on 10-15 July 2021.
6. Mitra, Rajarshi. "The Holocaust and the Bliss: Famine, Liberal Imperialism, and Nationalism in Bankim Chandra Chatterjee's *Anandamath* (1882)", Annual South Asia Conference Ireland India Institute, April 28 - 30, 2021 (virtual).
7. Arjab Roy. "Exploring Humanist and Marxist Approaches Towards Understanding Bengal Famine of 1943" – Panel Title: British Empire and Food Crisis: Two Famines in Bengal and their Literary and Visual Work, 4th Annual South Asia Conference 2020, Ireland India Institute, Dublin, April 28 - 30, 2021. (virtual)
8. Arjab Roy. "Death of an Adivasi: Interpreting and Understanding Bikram Hembrom's Death" – Panel Title: Adivasi Studies: Contours of a Field, 26th European Conference on South Asian Studies 2020, University of Vienna, Austria, 27-29 July, 2021. (Hybrid)

### **Other Activities:**

#### **Sessions chaired in Seminars/conferences**

1. Mitra, Rajarshi. Respondent for a panel in Second Seminar on Culture, Things and Empire: Series One Programme, Jan 20, 2021 (virtual). <https://culturethingsempire.wordpress.com/cfp/>

### **Editorial**

1. Barua, Suranjana. Member of Editorial Committee for the journal *Language and Language Teaching* (ISSN 2277-307X) for Vol 10 Issue 20





July 2021 and one of the Editors for Volume 11 Number 1 Issue 21 January 2022 ( <http://lit.org.in/>)

### Training

1. Arjab Roy Completed a One-Week International Online Faculty Development Programme on “Generation Z: Effective Strategies for English Language Teaching”, held from 21<sup>st</sup> – 28<sup>th</sup> March, 2022, organized by Department of Languages, Presidency University, Bengaluru, Karnataka.
2. Suranjana Barua Completed *Recurrent Training for Interlocutors, Aviation English Language Experts (Raters) and Aviation English Trainers* organized by Airports Authority of India from 17 October- 20 November, 2021.

### Paper Award

1. Ms. Bhavana Barman, Ph.D. research scholar of HSS department has been awarded the second prize in the best research paper award category in the Oral Presentation in the Research Conclave 2022, held at NIT Meghalaya from 28th February to 1st March 2022.



## **Construction and Campus Development**

Due to the Covid pandemic situation and resulting financial constraints, Institute could not undertake major constructions for almost 2 years. However, with the situations improving Institute took up the development of a waterbody in the heart of the campus in the beginning of the year 2022 and got the earthworks for the same completed through state PWD. In spite of the PMC (M/s HPL) not being re-engaged, the Institute has also been able to award its 2<sup>nd</sup> Boys Hostel (96 capacity Assam Type Building) and the Girls' Hostel Extension work (30 capacity Assam Type Building) and accordingly the work has now been started for the same.



## Students' Activities

During the year 2021-22, most of the classes were held online and the Students' Gymkhana Council elections were not held. SGC members were appointed based on nominations. Even though most of the students were not in campus during the year, lots of events and activities were held by the clubs under various boards, both in online and offline mode. The different Boards of the Students' Gymkhana and the various Clubs under them are as follows:

### **Programming Club**

- Robotics Club
- Mavericks- The Machine Learning Society
- Google Developer Students' Club

### **Cultural Board**

- Dance Club
- Photography Club
- Music Club
- Movie Club
- Reading Club
- Literary Club
- Quiz Club
- Drama Club
- Fine Arts Club

### **Sports Board**

- Outdoor Club
- Indoor Club

### **Welfare Board**

- Eco & Outreach Club
- Health Club
- Girls' Empowerment Group (GEG)

Various events conducted by 17 Clubs under the different Boards are given below:

### **Events under different Boards:**

Various events were held by different Clubs under the separate Boards during the year 2021-22. The list of the same is given below.

### **Technical Board**

<b>Programming Club</b>	
<b>Date</b>	<b>Events</b>
04.04.2021 – 05.04.2021	CP League #5
04.09.2021	Introduction to Flutter
06.09.2021 -22.09.2021	Instagram Quiz
07.09.2021 – 15.09.2021	Hack4Earth Hackathon (Under IIITG Swachhta Pakhwada)
11.09.2021	Code IIITG 4.0
12.09.2021	JavaScript Fundamentals
06.10.2021	Navigation and Stateful Widgets in Flutter
10.10.2021	Code IIITG 4.1
17.10.2021	Serving and Routing in NodeJS
07.11.2021	Code IIITG 4.2

10.11.2021 – 11.11.2021	CP League #6
13.11.2021 – 14.11.2021	CSS Clash
09.01.2022	Introductory Session
11.01.2022	Mentorship Program
14.01.2022	Introduction to Competitive Programming
16.01.2022	Introduction to Web Development - 1
17.01.2022 – 31.01.2022	Instagram Quizzes
19.01.2022	Orientation Session (Under Mentorship Program)
21.01.2022	Introduction to Web Development - 2
22.01.2022 – 23.01.2022	Senior – Junior Interaction Session
26.01.2022	JavaScript Fundamentals
30.01.2022	Code IIITG 5.0
01.02.2022 – 28.02.2022	Instagram Quizzes
03.02.2022	Introduction to Git and Github
04.02.2022 – 06.02.2022	CSS Clash #2
02.03.2022 – 04.03.2022	Tink – A – Thon
10.03.2022	Kotlin for Android Development Part - 1
13.03.2022	Kotlin for Android Development Part - 2
26.03.2022	Promises and Async JavaScript
28.03.2022	Code IIITG 5.1

### Robotics Club

Date	Events
12.10.2021	Circuit Simulation and Tinkercad Session
15.11.2021	Introduction to Matlab Robotics
31.01.2022	Introduction to Tinkercad
13.03.2022	Blender Session

### Mavericks – The Machine Learning Society

Date	Events
08.09.2021	Linear Algebra and Institution for Linear Regression for One Variable
15.09.2021	Introduction to Python and Pandas
09.10.2021	Implementation of Linear Regression
19.10.2021	Processing Data using Titanic Dataset
09.11.2021	Fitting Models on Titanic Dataset
15.01.2022	Conference on Machine Learning – Introductory Session
28.01.2022	Exploratory Data Analysis
12.03.2022	The Teachable Machine & Kaggle



Google Developer Students Club	
Date	Events
20.10.2021	Cloud Study Jam
21.10.2021	Intro to Github

## Cultural Board

Literary Club		
Date	Events	Details of Events
14.09.2021	We've Got Issues (Debate)	It was organised by Literary Club under Cultural Board under Swachhta Pakhwada events..
09.10.2021 – 11.10.2021	Essay Writing Competition	An essay writing competition on "Freedom Fighters of Rajasthan" was organised by Literary Club under Cultural Board of IIITG to celebrate "Azadi Ka Amrut Mahotsav" under EBSB.
11.03.2022	Poetic Origin	A recitation competition "Poetic Origin" was organised by Literary Club under Cultural Board of IIITG.
Movie Club		
Date	Events	
15.10.2021	The Netflix – Prime Quiz	
Music Club		
03.04.2021	Scribbled Harmony (Round 2)	
Fine Arts Club		
Date	Events	Details of Events
03.05.2021	Relay Art Competition "ARTVILLE"	A one-hour relay art competition was organised by Fine Arts Club under Cultural Board of IIITG.
07.09.2021	Poster Making Campaign	It was a 5 days long event where participants submitted posters on the theme of Swachhta under Swachhta Pakhwada Campaign. It was organised by Fine Arts Club under Cultural Board of IIITG.
09.10.2021	Culture on Canvas	In this event, participants represented their favourite state's culture (heritage, tradition, food, clothes, festival, music and dance

		forms, etc.) through their artistic skills. It was organised by Fine Arts Club under Cultural Board of IIITG.
14.01.2022	Joys of Childhood	In this events, the participants represented their childhood phase through their artistic skills. It was organised by Fine Arts Club under Cultural Board of IIITG.

### Quiz Club

Date	Events	Details of Events
30.05.2021	EBSB Event Quiz	Under EBSB event, a quiz was organised by Quiz Club in collaboration of Literary Club under Cultural Board of IIITG. The theme of the quiz is "Modern Rajasthan Quiz – It is not always sand dunes, forts and kings". Under this event, a new language of Rajasthan has been taught under EBSB.
02.09.2021 – 21.09.2021	A Question A Day	It was organised on the Instagram page of Quiz Club under Cultural Board of IIITG. Everyday a new question was asked through the Instagram stories and the first three people to answer the question correctly were allotted points. At the end of the month the cumulative score was calculated and the winner was given a shoutout on Instagram.
12.09.2021	Swachhta Quiz (Under Swachhta Pakhwada)	It was organised by Quiz Club under Cultural Board of IIITG as part of Swachhata Pakhwada.
01.01.2022	A Question A Day	A daily online quiz (one question in one day) on Instagram was organised by Quiz Club under Cultural Board of IIITG and the first three people to answer the question correctly were allotted points. At the end of the month, the cumulative score was calculated and winner was given a shoutout on Instagram.
17.01.2022	Fresher's Quiz	

### Reading Club

Date	Events
22.02.2022	7 to 14

### Photography Club





Date	Events	Details of Events
<b>24.01.2022 – 04.02.22</b>	Campus Hunt	It was a 7 days long event named “Campus Hunt” and the participants were asked to capture the beauty of the Campus. It was organised by Photography Club under Cultural Board of IIITG.
<b>26.01.2022</b>	Long Exposure	It was organised on the occasion of Republic Day in boys hostel and it was organised by Photography Club under Cultural Board of IIITG.
<b>22.03.2022</b>	Sports Carnival	The Photography Club under Cultural Board took part in taking photographs of the event.

#### Dance Club

Date	Events	Details of Events
06.04.2021	Offline Dance Club Session	It was organised by Dance Club under Cultural Board of IIITG to teach Tollywood style dance to students
19.04.2021	Bihu Celebration	Bihu Celebration was conducted in IIITG ground. Various dances like Tiwa, Jhumoor, Bihu and Pahari were performed. It was organised by Dance Club under Cultural Board of IIITG.
29.04.2021	Dance Video for World Dance Day	On the occasion of World Dance Day, club members of Dance Club posted a dance video of different styles on Instagram. It was organised by Dance Club under Cultural Board of IIITG
15.08.2021	Independence Day Celebration	Independence Day was celebrated in IIITG. National Flag was been hosted by Director. Cultural Programme by students was organized by Cultural Board.
05.09.2021	Teacher's Day Celebration	Teacher's Day was celebrated online in IIITG by Dance Club under Cultural Board of IIITG.
28.01.2022	Badhte Kadam Event	

#### Drama Club

Date	Events
05.09.2021	Mimicry and Stand Up Comedy

15.09.2021	Awareness Video on Mental and Physical Well Being (Under Swachhta Pakhwada)
06.03.2022	Online Session
07.03.2022	Offline Session for Monologue
07.03.2022 – 11.03.2022	Monologue Competition (on the occasion of Women's Day)

## Sports Board

Indoor Sports & Outdoor Sports		
Date	Events	Details of Events
30.01.2022	Sports Talk on Indigenous Sports of Assam and Rajasthan EBSB	A general discussion on indigenous sports from Assam and Rajasthan promoted by Govt. of India on national level was organised by Indoor Sports Club and Outdoor Sports Club under Sports Board of IIITG as part of EBSB.
24.03.2022 – 08.04.2022	Sports Carnival	It was organised by Indoor Sports Club under Sports Board of IIITG. In this events, various sports like table tennis, carom and chess have been played by Faculty, Students and Staffs.

## Welfare Board

Eco and Outreach Club		
Date	Events	Details of Events
06.09.2021 – 12.09.2021	Swachhta Pakhwada	Under this event, cleanliness, plastic segregation drive, tree plantation drive, awareness program related to waste management were organised. Swachhta Pledge was also taken by the people of IIITG. It was organised by Eco and Outreach Club under Welfare Board of IIITG.
12.09.2021	JavaScript Fundamentals	
02.10.2021	Gandhi Jayanti	Eco & Outreach Club under Welfare Board of IIITG organised a Cleanliness and Plastic segregation drive along with



		Swachhta Pledge taking ceremony inside the IIITG campus.
30.01.2022 – 02.02.2022	Article Writing Competition	An article writing competition on “Environmental Cost of Covid – 19” was organised by Eco & Outreach Club under Welfare Board of IIITG.
30.01.2022 – 29.04.2022	Adopt a Tree	It is an ongoing event on adoption of a tree across India and post the picture in every 15 days. Eco & Outreach Club under Welfare Board of IIITG has taking initiative since past few years and promoting this initiative.
05.02.2022	Article Writing	An article writing on “Environmental Cost of Covid-19” was organised by Eco and Outreach Club under Welfare Board of IIITG.
06.03.2022	Open Air Camp	Eco and Outreach Club under Welfare Board in collaboration with Aranyak (A Nature and Wildlife Conservation Organisation) organised the event. The theme of the event was “ <i>Nature Conservation with Special Reference to Greater/Lesser Adjutant Stork</i> ”. Photography Club under Cultural Board took part in taking photographs of the events.
25.03.2022	Webinar :Emotional Roller Coaster	It was organised by Eco and Outreach Club under Welfare Board to insist the students to maintain their mental health and teaching the ways in which they can keep themselves fit and happy.
27.03.2022	EBSB Talk Show	It was organised by Eco and Outreach Club under Welfare Board on the topic “Riverine and Desert Ecology Pertaining to Assam and Rajasthan” as part of EBSB.
<b>Girls' Empowerment Group</b>		
<b>Date</b>	<b>Events</b>	<b>Details of Events</b>
23.10.2021	Hacktoberfest Kickoff	It was organised by Girls' Empowerment Group under Welfare Board in collaboration with Google Developer Student Club under Technical Board of IIITG.

## **ANNUAL INSTITUTE AWARDS:**

The Annual Institute Awards is given out every year in three categories which are 1) Best performing Club, 2) Exemplary Hostel Wing and 3) Best Social Initiative.

The Exemplary Hostel Wing Award for 2020-21 was dropped as most of the students were not in hostels. Also, for the Best Social Initiative Award, none of the nominations could qualify for the Award.

Therefore, for the year 2020-21, only one award was given, in the category of Best Performing Club, which was announced on 19.04.2021. The details of winner are as follows:

### **Best Performing Club 2021-22:**

Winner: Prashnatantra (Quiz Club) under Cultural Board of IIITG.

Club Coordinators: Singh Shantanu Sanjay, Shubham Jhawar

Caretaker Students' Gymkhana Council Member in – Charge: Meghna Singh

Student Members: Jha Parikirt, Yashwanth Manivannan, Priyanka Kumari, Sanial Das, Amartya Choudhary, Rajat Bhattacharya, Meghna Singh, Gurnoor Singh, Ujjwal Goel, Yashraj Singh Rathore, Amartya Dutta, Ananya Pathak, Ajit Ashok Singh, Vikas Dhayal, Sudesh Shantanu Raj, Ojasv Singh, Neelabh Shukla, Pawar Ayush Jitendra, Yarababugari Mohammed Javeed, Dhruv Verma, Ailneni Sai Shishir, Kundrapu Swaroop, Aarushi Gajre, Amaan Ahmad, Mansi Sahu, Ishan Chaudhary, Harmanjeet Singh, Shivi Gupta, Shevya Tripathi, Richa Singh, Lakshmi Priya Pampati, Ashish Goswami, Anushree Anil, Shruti Sharan, Shikhar Barthawal, Raghav Behety, Talika Gupta, Kartik Gupta, Saksham Tomar, Kartik Verma, Nihar Pawar, Swapnil Aman, Sudhanshu Rai, Ashwani Kumar.

## **STUDENTS' ACHIEVEMENTS**

IIIT Guwahati students have at National and International level earned a name both in academic as well as extra-curricular activities outside the Institute. Some such achievements are listed below:

### **Academic achievements**

1. Bhavana Barman, Roll No: 2103025 (HSS)- Won 2nd position in oral presentation of Research Paper at 3rd Research Conclave 2022, organized by NIT Meghalaya. Event was held on 28<sup>th</sup> February and 1<sup>st</sup> March 2022 at National Institute of Technology, Meghalaya.
2. Subhajit Ghosh, Roll No: 2102041 (CSE)- Won 2<sup>nd</sup> Prize in Data Science Hackathon organised by EICT Academy-IIIT Kanpur in association with Ikigai Lab. The event was held in online mode on 18<sup>th</sup> February 2022.
3. Nimish Agrawal & Sayan Kar, Roll Nos: 1801113 & 1801162 (CSE)- Won the Avalanche Developer Contest 2021. It was a Global event that was held in August 2021. They also won prize money of \$1000. They also won the Polkadot Hackathon: APAC Edition (Docathon track). It was an Asia pacific



event held between October to December 2021 in which they won a prize money of \$2000.

### Extra-curricular Achievements

1. Ankit Kumar, Roll No: 1801021 (ECE)- Won 2<sup>nd</sup> position in the Chess Competition organized by Fit India Club, IIIT Kota. It was held in online mode on 12<sup>th</sup> June 2021.
2. Ankur Singh, Roll No: 2102004 (ECE)- Won a quiz competition held in Lucknow on 14<sup>th</sup> December 2021. He won the 3<sup>rd</sup> Prize and got a cash prize of ₹2000. He also won the consolation prize at the same event in "Mobile App Sharing Competition" in which he won a consolation cash prize of ₹2500.
3. Amitesh Kumar, Roll No: 1901023 (CSE)- Won Best beginner track prize in Pickhacks 2021 out of 500 international students participating in the hackathon. It was held remotely in April 2021. He also won MLH Most Creative Use of Twilio in DeltaHacks8, out of 500 international students participating in the hackathon. It was held remotely in January 2022.
4. Ashutosh Pandey, Roll No: 2101046 (CSE)- Won "Best Delegate" in Model United Nations Conference held in online mode from 11<sup>th</sup> to 13<sup>th</sup> March, 2022. It was held by IIT Guwahati during the Alcheringa Festival (IITGMUN'22). He also won "High Commendation" in Model United Nations Conference held in online mode from 11<sup>th</sup> to 12<sup>th</sup> February 2022. It was held by IIIT Una.

### Details of Scholarship for the Year 2021-22:

Scholarship Schemes	Number of Students benefitted
Central Sector Scholarship for Top Class Education for SC Students	10
Merit Cum Means Scholarship for Professional and Technical Courses	1
Mukhya Mantri Medhavi Vidyarthi Yojna (MMVY)	2
Central Sector Scheme of Scholarship for College and University Students	3
Foundation for Academic Excellence & Access	4

Amount Range (Per Annum)	Number of Students
Up to ₹1 Lakh	8
₹1 Lakh - ₹2 Lakh	Nil
₹2 Lakh & Above	12



# Training and Placement

## Placement Status B. Tech 2021-22 Batch:

IIIT Guwahati is having a successful placement session. The companies where our students got placed till now are: Amazon, Deloitte, ZS Associates, Tekion, Mindtickle, Gameskraft, Infoedge(Monster.com), Commvault, Avalara, Publicis Sapient, Juspay, Legato Healthcare, Samsung Research Institute – Delhi etc. The students got offers from both on-campus and off-campus selection processes. The statistics so far are: [LPA = lakhs per annum]

Category	CSE	ECE	Overall
(1) Total student registered	105	65	170
(2) Total job offered till 05.04.2022	144	66	210
(3) Average salary till 05.04.2022	16.37 LPA	9.58 LPA	14.00 LPA
(4) Median salary till 05.04.2022	15.5 LPA	7.6 LPA	12.5 LPA
(5) Total students selected till 05.04.2022	99	51	150
(6) Highest salary till 31.03.2022	44.3 LPA	15.5 LPA	44.3 LPA
(9) Percentage placed till 31.03.2022	94.29%	78.46%	88.24%

## Placement Status M. Tech 2021-22 Batch:

The statistics so far are (till 31.03.2022):

Category	CSE	ECE	Overall
(1) Total student registered	22	7	29
(2) Total job offered	11	0	11
(3) Average salary	9.73 LPA	-----	9.73 LPA
(4) Median salary	8.5 LPA	-----	8.5 LPA
(5) Total students selected	10	0	10
(6) Students going for higher studies (tentative)	-----	-----	-----
(7) Students starting their own company	-----	-----	-----
(8) Highest salary	16.2 LPA	---	16.2 LPA
(9) Percentage placed so far	45.45%	0%	34.48%

## **Perspective Lecture Series 2021-22**

IIITG Perspective Lecture Series - being an on-campus and interactive Lecture Series since inception - was postponed in the period 1 April 2021 -31 March 2022 due to the pandemic.

## **Officers and Other Functionaries of the Institute:**

<b><u>Name</u></b>	<b><u>Designation</u></b>
Prof. Gautam Barua	Director
Mr. Uttam Ch. Das	Registrar
Dr. Ferdous Ahmed Barbhuiya	Associate Dean, R&D
Dr. Bidisha Dasgupta	Associate Dean, Academics
Dr. Suranjana Barua	Associate Dean, Students' Affairs
Dr. Rakesh Matam	Head of the Deptt. of CSE
Dr. Surajit Panja	Head of the Deptt. of ECE
Dr. Gautam Kalita	Head of the Deptt. of Sc. & Maths.
Dr. Hari Kanta Choudhury	Head of the Deptt. of HSS
Dr. Rakesh Matam	Chief Warden
Dr. Rajarshi Mitra	Warden, Boys' Hostel
Dr. Moumita Roy	Warden, Girls' Hostel
Dr. Sumit Mishra	Associate Warden, Boys' Hostel
Dr. Soumi Chattopadhyay	Associate Warden, Girls' Hostel
Dr. Bijit Kumar Das	Placement in-charge
Dr. Anuradha Jha	Library Coordinator
Dr. Pallav Barua	Superintending Engineer/Estate Officer
Mr. Mriganka Dutta Saikia	Assistant Registrar, Finance & Accounts

## **Staff of the Institute:**

<b><u>Name</u></b>	<b><u>Designation</u></b>
Mr. Gagan Chandra Talukdar	Library Information Officer
Ms. Richa Bismitter	Library Information Officer
Ms. Sweety Tamuli	Senior Superintendent
Mr. Dinamoni Borah	Senior Superintendent

Mr. Bhaskar Jyoti Borah	Senior Superintendent
Mr. Churchill R Marak	Senior Superintendent
Mr. Nayanjyoti Baishya	Senior Superintendent
Mr. Navajit Kalita	Senior Superintendent
Mr. Birabrata Seal	Senior Tech Superintendent
Mr. Prasenjit Deka	Senior Tech Superintendent
Mr. Kishore Kumar Das	Senior Tech Superintendent
Mr. Hirak Jyoti Nath	Senior Tech Superintendent
Ms. Sangeeta Deka	Junior Accounts Officer, on lien till 10.02.2022 (released on 10.02.2022 AN)
Mr. Ratul Goswami	Junior Accounts Officer
Mr. Arup Borah	Junior Tech Superintendent
Mr. Raushan Kumar	Junior Tech Superintendent
Mr. Nabadeep Gogoi	Junior Assistant
Mr. Injamul Hussain	Junior Assistant
Mr. Amit Kumar Sharma	Junior Assistant
Mr. Madhurjya Das	Junior Assistant
Mr. Dibash Das	Junior Assistant
Mr. Samar Jyoti Nath	Junior Assistant
Ms. Priyanka Mandal	Junior Assistant
Ms. Supriya Dutta	Junior Assistant
Mr. Rupam Sharma	Junior Assistant



## **Budget and Expenditure Summary**

The Budget and expenditure summary for the year are as follows:

<b>Item</b>	<b>Recurring/Revenue (₹)</b>	<b>Non-Recurring/Capital (₹)</b>
<b>Balance B/F from 2020-21</b>	<b>Nil</b>	<b>Nil</b>
<b>Grant in Aid 2021-22</b>	<b>Nil</b>	<b>Nil</b>
<b>Internal Revenue Generated 2021-22</b>	<b>19,52,07,729.51</b>	<b>Nil</b>
<b>Expenditure 2021-22</b>	<b>15,83,61,353.75</b>	<b>63,51,092.71</b>
<b>Balance C/F to 2022-23</b>	<b>3,68,46,375.76</b>	<b>Nil</b>

Sources of Funds (including balance brought forward)

<b>Item</b>	<b>Recurring/Revenue (₹)</b>	<b>Non-recurring/Capital (₹)</b>
<b>Govt. of India</b>	<b>Nil</b>	<b>Nil</b>
<b>Govt. of Assam</b>	<b>Nil</b>	<b>Nil</b>
<b>Industry partners</b>	<b>Nil</b>	<b>Nil</b>
<b>Income from Interest</b>	<b>8,38,231.00</b>	<b>Nil</b>
<b>Income from fees and Others</b>	<b>19,43,69,498.51</b>	<b>Nil</b>

A summary of the Annual Accounts is given in the Appendix.

## APPENDIX

### A Summary of the Annual Accounts 2021-22

BALANCE SHEET			
		[Amount in ₹]	
SOURCES OF FUNDS	Schedule	Current Year	Previous Year
CORPUS/CAPITAL FUND	1	1,32,27,39,396.14	1,32,01,78,530.29
DESIGNATED/ EARMARKED / ENDOWMENT FUNDS	2	-	-
CURRENT LIABILITIES & PROVISIONS	3	3,82,30,734.77	3,59,06,593.77
<b>TOTAL</b>		<b>1,36,09,70,130.91</b>	<b>1,35,60,85,124.06</b>
APPLICATION OF FUNDS	Schedule		
FIXED ASSETS	4		
Tangible Assets		1,28,82,58,429.79	1,32,00,16,213.08
Intangible Assets		9,39,573.00	-
Capital Works-In-Progress		37,36,657.00	
INVESTMENTS FROM EARMARKED / ENDOWMENT FUNDS	5		
Long Term		-	-
Short Term		-	-
INVESTMENTS - OTHERS	6	-	-
CURRENT ASSETS	7	5,12,34,253.98	2,55,22,385.00
LOANS, ADVANCES & DEPOSITS	8	1,68,01,217.14	1,05,46,525.98
<b>TOTAL</b>		<b>1,36,09,70,130.91</b>	<b>1,35,60,85,124.06</b>





INCOME AND EXPENDITURE ACCOUNT			
		[Amount in ₹]	
Particulars	Schedule	Current Year	Previous Year
<b>INCOME</b>			
Academic Receipts	9	19,22,62,134.01	14,04,65,663.00
Grants / Subsidies	10	-	33,00,000.00
Income from investments	11	8,38,231.00	4,12,410.00
Interest earned	12	-	
Other Income	13	21,07,364.50	47,16,280.00
Prior Period Income	14	-	72,983.00
<b>TOTAL (A)</b>		<b>19,52,07,729.51</b>	<b>14,89,67,336.00</b>
<b>EXPENDITURE</b>			
Staff Payments & Benefits (Establishment expenses)	15	11,72,24,814.16	10,43,60,550.00
Academic Expenses	16	85,85,944.00	13,52,772.00
Administrative and General Expenses	17	2,07,85,068.00	85,53,767.00
Transportation Expenses	18	1,34,913.00	96,410.00
Repairs & Maintenance	19	1,33,95,394.00	2,67,57,394.00
Finance costs	20	50,921.59	1,50,925.00
Depreciation	4	3,71,48,462.00	3,08,78,765.00
Other Expenses	21	27,379.00	
Prior Period Expenses	22	3,06,781.00	(1,30,028.40)
<b>TOTAL (B)</b>		<b>19,76,59,676.75</b>	<b>17,20,20,554.60</b>
Balance being excess of Income over Expenditure (A-B)		<b>(24,51,947.24)</b>	<b>(2,30,53,218.60)</b>
Transfer to / from Designated Fund			
Building fund			
Others - Excess depreciation charged in the previous year	4	21,49,861.00	
<b>Balance Being Surplus / (Deficit) Carried to Capital Fund</b>		<b>(3,02,086.24)</b>	<b>(2,30,53,218.60)</b>

## RECEIPTS AND PAYMENTS ACCOUNT

						Amount in Rupees	
RECEIPTS		Current Year	Previous Year	PAYMENTS		Current Year	Previous Year
I.	Opening Balance			I.	Expenses		
	a) Cash Balances	63,500.00	76,185.00		a) Establishment Expenses	11,72,24,814.16	10,43,60,550.00
	b) Bank Balance				b) Academic Expenses	85,85,944.00	13,52,772.00
	i. In Current accounts	20,00,253.00	35,99,099.72		c) Administrative Expenses	2,07,85,068.00	85,53,767.00
	ii. In Deposit accounts	2,20,00,000.00	1,33,00,000.00		d) Transportation Expenses	1,34,913.00	96,410.00
	iii. Savings accounts	64,58,632.00	1,16,15,635.95		e) Repairs & Maintenance	1,33,95,394.00	2,67,57,394.00
II.	Grants Received				f) Prior period expenses	3,06,781.00	841.00
	a) From Government of India	-			g) Finance Cost	50,921.59	1,50,925.00
	b) From State Government	-	-	II.	Payments against Earmarked/ Endowment Funds	-	26,54,315.00
	c) From Industry Partners	-	-	III.	Payments against Sponsored Projects/Schemes	1,30,06,448.00	5,30,35,808.00
				IV.	Payments against Sponsored Fellowships/Scholarships	-	
				V.	Investments and Deposits made		
III.	Academic Receipts	19,22,62,134.01	14,04,65,663.00		a) Out of Earmarked/Endowments funds	-	
IV.	Receipts against Earmarked/ Endowment Funds	-			b) Out of own funds (Investments- Others}	-	
V.	Receipts against Sponsored Projects/Schemes	91,16,930.00	5,17,06,205.00	VI.	Term Deposits with Scheduled Banks	-	
VI.	Receipts against sponsored fellowships and Scholarships	-		VII.	Expenditure on Fixed Assets and Capital Works - in- Progress		
VII.	Income on Investments from				a) Fixed Assets	41,80,390.71	1,11,95,007.00
	a) Earmarked/Endowment funds	-			b) Capital Works- in- Progress	37,36,657.00	-
	b) Other investments	-		VIII.	Other Payments including statutory payments	-	



VIII.	Interest received on			IX.	Refunds of Grants		
	a) Bank Deposits	9,65,330.26	2,02,463.00	X.	Deposits and Advances	3,72,45,517.67	2,35,76,758.99
	b) Loans and Advances			XI.	Other Payments	-	
	c) Savings Bank Accounts	-		XII.	Closing balances		
IX.	Investments encashed	-			a) Cash in hand	13,468.00	63,500.00
X.	Term Deposits with Scheduled Banks encashed	-			b) Bank balances		
XI.	Other income (including Prior Period Income)	21,07,364.50	47,89,263.00		In Current Accounts	27,28,473.17	20,00,253.00
XII.	Deposits and Advances	3,49,02,238.51	3,15,02,418.32		In Savings Accounts	-27,86,915.19	64,58,632.00
XIII.	Miscellaneous Receipts including Statutory Receipts	-			In Deposit Accounts	4,31,40,000.00	1,70,00,000.00
XIV	Any Other Receipts - Capital Work in Progress refund	-			In Flexi Fixed Deposit	81,28,507.00	
<b>TOTAL</b>		<b>26,98,76,382.00</b>	<b>25,72,56,932.99</b>	<b>TOTAL</b>		<b>6,98,76,382.00</b>	<b>25,72,56,932.99</b>

## Picture Gallery



**Tree Adoption Campaign organised by Eco & Outreach Club under Welfare Board**



**Open Air Camp organised by Eco and Outreach Club under Welfare Board**





**Sports Carnival organised by Sports Board**



**Plastic Segregation Drive organised by Eco and Outreach Club under Welfare Board**





**Bihu Celebrations and Institute Awards organised by Dance Club under Cultural Board**



**Bihu Celebrations and Institute Awards organised by Dance Club under Cultural Board**





**Institute Awards**



**Construction of Waterbody at IIITG Campus**





**Bhumi Pujan of 2nd Boys Hostel at IIITG Campus**



**Seminars and Research Lab organized by Dept. of Science and Mathematics**





# LABORATORY FACILITIES



## Indian Institute of Information Technology Guwahati

Bongora,  
Guwahati- 781 015, Assam, INDIA

**Tel** +91 9531435223

Website- [www.iiitg.ac.in](http://www.iiitg.ac.in)

