

UNIVERSITY OF ENGINEERING & MANAGEMENT, KOLKATA



University Area, Plot No. III - B/5, Main Arterial Road,
New Town, Action Area - III, Kolkata-700160

RESEARCH DIRECTORY

**Vol. 2
January, 2022**

RESEARCH DIRECTORY

**January 2022
Volume 2**



**UNIVERSITY OF ENGINEERING & MANAGEMENT,
KOLKATA**

University Area, Plot No. III – B/5, New Town, Action Area – III, Kolkata – 700160

PRELUDE

The Research Directory is a compendium that provides various research wings in the University and extent of research works. This gives an access to the centralized information on various facets and directions of researches being pursued in an institution. The Directory contains the database of faculty who are open to discuss research opportunities with the undergraduate and post graduate students. This also identifies the Faculty Research Mentors in an Institution.

The Research Directory regularly being published by leading Research Universities in the world like Massachusetts Institute of Technology, University of California, John Hopkins University, Texas A & M University, Princeton University, George Institute of Technology, Stanford University, University of California-Berkley, Columbia University and many others that carries its legacy and long heritage in research and innovation.

Top Tier, Nationally Competitive Research Universities popular for world class research excellence develops comprehensive documentation of versatile research activities not only for the University's own circulation but for dissemination of knowledge to the outside world. This is one of the best practices they follow.

Keeping in pace with the current global trend, University of Engineering & Management, Kolkata is publishing its own Research Directory for reinforcing the research culture and to create opportunities for interdisciplinary collaborative researches further through intensive networking.



Prof. (Dr.) Sajal Dasgupta
Vice Chancellor
UEM, Kolkata

MESSAGE FROM THE DESK OF CHANCELLOR



It is a matter of great pleasure for all of us to note that the university is publishing its second Research Directory which is a noble initiative. This Directory will be published quarterly and will encompass all the research and entrepreneurship activities undertaken by faculty and students of the University during the particular quarter. Since this is the second issue of the Directory it covers the research achievements of the University over the past one year. Flipping through the directory one understands how enterprising and innovative our students of UEM, Kolkata is and how wonderfully their research careers are shaping up under the mentorship of our faculty. Our faculty are involved in frontline research activities which are reflected by the highly reputed international journals in which their articles are getting published. I wish the students and faculty members of UEM, Kolkata to keep up their entrepreneurial and research undertakings and keep growing under the mentorship of the Deans and Vice Chancellor of UEM, Kolkata.

A handwritten signature in purple ink, consisting of the letters 'S.C.' in a stylized, cursive font.

Prof. (Dr.) Satyajit Chakrabarti
Chancellor
UEM, Kolkata

MESSAGE FROM THE DESK OF VICE-CHANCELLOR



Research Intense Education and Creation of Knowledge are two distinctive features of a University. Research Outcomes are revealed through publication of papers in reputed journals & conferences, Research project activities, filing of patents for new concepts & products, Testing & Consultancies, Creation of knowledge & Innovation. University of Engineering & Management, Kolkata (UEMK) is evolving towards a Center of Excellence involving all spheres of research. Since last few months, I was walking down memory lane to unearth best practices embedded seamlessly into the frontline research activities of BESU (erstwhile BE College, Shibpur) while I was functioning as Dean (Research & Consultancy) almost 30 years back. Suddenly I recollected that with the inspiration of our seniors we had published a RESEARCH DIRECTORY to develop a comprehensive document compiling various outcomes. At that time there was no scope to create soft copies of documents or computer edited versions. Everything was done manually and with hard labor.

Today, in UEMK, we have decided to implement the same idea. Information on research outcomes is available through various sources. Our objective is to bring them together under one umbrella to collate and disseminate information professionally. I sincerely expect that after publication of the Directory, all our faculty and students will draw immense benefits, especially while presenting before regulatory authorities and accredited agencies. The research directory, Volume 1 has been published by the University in July 2021. The Volume 2 is being published now. UEMK will continue publishing this booklet each quarter with a view to project achievements of the University on research front.

I like to convey my sincere thanks and gratitude to those Faculty and staff whose untiring efforts and high-end dedication have made it possible to publish this Directory within a very short span of time.

I owe my thankfulness to the entire teaching fraternity of the University.

Best wishes to all.

A handwritten signature in blue ink, consisting of a stylized 'S' followed by a horizontal line and a small flourish.

Prof. (Dr.) Sajal Dasgupta
Vice Chancellor
UEM, Kolkata

MESSAGE FROM THE DESK OF PRO VICE-CHANCELLOR



The Research Directory of University of Engineering and Management, Kolkata aims to bring under one umbrella the research and entrepreneurial endeavors undertaken by the students and faculty members of this young and growing University. Our highly motivated students have not only published their research works in international journals and applied for patenting their inventions; they have also started their own startup companies with seed money provided by the University. We want our students to grow into good innovators and entrepreneurs who will be worthy citizens of our country and assets for our society. Our teachers are of course playing a significant role in guiding the students. The high-grade international journals reported in this Research Directory are also a mandate of the quality of research studies our faculty members are involved in.



Prof. (Dr.) Satyajit Chakrabarti
Pro Vice Chancellor
UEM, Kolkata

MESSAGE FROM THE DESK OF DEAN (ENGINEERING)

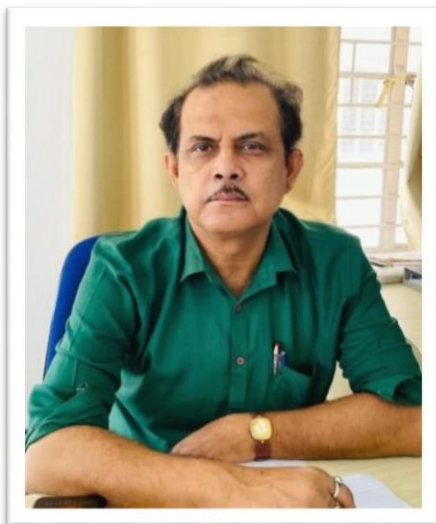


I express my heartfelt congratulations to all students and faculty of University of Engineering and Management, Kolkata for the wide spectrum of research and developmental activities portrayed in the Research Directory. I would especially like to commend the Vice Chancellor, UEMK for his vision of compiling all various research activities of the University in this Directory. It will help us to realize our strengths and weaknesses in this domain and also encourage inter disciplinary research activities. I wish all the students and faculty members of UEMK keep marching steadily on the path of excellence in research and entrepreneurship under the able guidance of Chancellor, Vice Chancellor, Pro Vice Chancellor and all the Deans of the University.



Prof. (Dr.) Kamakhya Prasad Ghatak
Dean (Engineering)
UEM, Kolkata

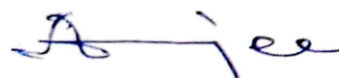
MESSAGE FROM THE DESK OF DEAN (RESEARCH)



I would like to welcome you to the University Research Directory to learn about our efforts in research. The University's Research Excellence is built upon subject matter experts from about 11 departments and research group that join over more than 191 research scholars to pursue joint endeavors in myriad research and development program of the University.

We will do our best in this faculty to make studying here a transformative learning experience and a spring board to a bright and fulfilling future for our students. We also welcome our alumni to visit us to provide their views and feedback and to lend us their support.

I believe this is what striving for more meaningful work can help us to do.



Prof. (Dr.) Abir Chattopadhyay
Dean (Research)
UEM, Kolkata

MESSAGE FROM THE DESK OF DEAN (SCIENCE)



The Research Directory of University of Engineering and Management, Kolkata is a mandate of the innovative and highly motivated students that our enthusiastic faculty members are nurturing. The entrepreneurial activities and startups our students are involved in have resulted not only due to the seed money and constant encouragement provided by the University but also due to their enterprising attitude and untiring efforts. Our faculty members are also carrying on panorama of research activities in various branches of science and technology and their works are getting published in highly reputed journals. Some of the faculty members are also patenting their inventions along with their students. I wish students and faculty members of UEMK keep on their proliferating research and developmental activities in years to come.

Prof. (Dr.) Rajiv Ganguly
Dean (Science)
UEM, Kolkata

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**Publications in
International/National
Journals
(August 2021 to December 2021)**

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1. Hazra, M., Bhattacharya, B., Sengupta, S., Mandal, M., Mitra, P., Bhattacharjee, K., Das, A., “Analysis on the Status of Rent of Housing Industry”, American Journal of Electronics & Communication (AJEC), Vol. 2, Issue 1, Pp. 13 – 15, August, 2021
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5. Basu, A., Securing access to justice in the enforcement of human rights: INDIA and SAARC., International Journal of Law, Management & Humanities, Vol. 4, Issue 5, September, 2021
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Department of Computer Science & Engineering

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Summary

Publication in National and International Journal

Departments	International/National Journals August 2021 to December 2021 (Six months)	July 2020 to December 2021 (Cumulative)
BA	4	11
BSH	14	49
BT	34	60
CA	3	12
CSE	3	16
CST/CSIT	10	10
ECE	4	13
EE	4	10
LAW	6	8
TOTAL	82	189

**Publications in
International/National
Conferences
(August 2021 to December 2021)**

Department of Computer Application

1. Das, A. et al, Selection of Variables in Logistic Regression Model with Genetic Algorithm to Stroke Prediction, International Conference on Social Work, Science & Technology ICSST2021, August, 2021 [BEST PAPER AWARD]
2. Das, A. et al, An Enhanced Random Forest Model for Detecting Effects on Organs after Recovering from Dengue, International Conference on Social Work, Science & Technology ICSST2021, August, 2021
3. Paul T., Roy S., Maity S., Bhattacharya A., Dutta S., Ghatak S., COVID-R: A Deep Feature Learning-Based COVID-19 Rumors Detection Framework in Emerging Technologies in Data Mining and Information Security, Advances in Intelligent Systems and Computing, vol 1300. Springer, Singapore. https://doi.org/10.1007/978-981-33-4367-2_86, IEMIS, August, 2021
4. Bhattacharya, A., Ghosh, G., Mandal, R., Ghatak, S., et al, Predictive Analysis of the Recovery Rate from Coronavirus (COVID-19) in Cyber Intelligence and Information Retrieval, Lecture Notes in Networks and Systems, vol 291. Springer, Singapore. https://doi.org/10.1007/978-981-16-4284-5_27, IEMIS, August, 2021

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Department of Electrical Engineering

1. Singha, S., Mandal, N.K., Jana, B., Application of dynamic weight with distance to reduce Packet loss in RED based Algorithm, Proc. of 6th International Conference on Emerging applications of Information Technology(EAIT), August, 2021DOI: 10.1007/978-981-16-4435-1_52
2. Ghosh, A., Chakraborty, N., Cost Efficient Node Placement in Wide Area Monitoring through Wireless Sensor Network to Reduce Data Transmission Energy, IEMENTECH 2021, IEEE Proceedings, November, 2021,ISBN:978-1-6654-1803-4, doi: 10.1109/IEMENTech53263.2021.9614732
3. Ganguly, A., Bhadra, S., Bhowmick, P., Sen, S., Adaptive secondary frequency control of islanded AC microgrids subjected to disturbances, IEMCON 2021, IEEE Proceedings, December, 2021, ISBN: 978-1-6654-0066-4, doi: 10.1109/IEMCON53756.2021.9623113
4. Ganguly, A., Bhadra, S., Bhowmick, P., Sen, S., Distributed secondary voltage control of islanded AC microgrids: A comparative study, IEMENTECH 2021, November, 2021, ISBN: 978-1-6654-1803-4, doi: 10.1109/IEMENTech53263.2021.9614852

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Department of BioTechnology

1. Paul, S., Saha, S., Chakraborty, A., Jana, A., Mukherjee, S., Co-cultivation as a strategy to reduce food chain mediated arsenic contamination in human beings, International Conference of biotechnology & Biological sciences, BIOSPECTRUM, November, 2021.
2. Paul, S., Bhattacharjee, S., Nath, S., Mahakud, J., Sharma, U., Mukherjee, S., A comparative study of arsenic toxicity on different biomarkers between hyper & non-hyper accumulator plants, International Conference of biotechnology & Biological sciences, BIOSPECTRUM, November, 2021.
3. Mukherjee, S., Chatterjee, N., et al, Comparative study of heavy metals on medicinal plants to understand its effects on human health, International Conference of biotechnology & Biological sciences, BIOSPECTRUM, November, 2021.
4. Mukherjee, S., Banerjee, S., et al, Immunotherapy: adding a new dimension to cancer therapy, International Conference of biotechnology & Biological sciences, BIOSPECTRUM, November, 2021.
5. Talukder, P., Dutta, D., Bose, I., et al, Molecular Pathogenesis of Nipah Virus- A review, International Conference of biotechnology & Biological sciences, BIOSPECTRUM, November, 2021.
6. Talukder, P., Roy, S., Jana, A., et al, Role of secondary metabolites in combating biotic stress on Brinjal (*Solanum melongena* L.) imparted by shoot and fruit borer, International Conference of biotechnology & Biological sciences, BIOSPECTRUM, November, 2021.
7. Talukder, P., Chanda, S., Chaudhuri, B., CRISPR-based gene editing: A modern approach for study and treatment of cancer, International Conference of biotechnology & Biological sciences, BIOSPECTRUM, November, 2021.
8. Talukder, P., Saha, A., Roy, S., et al, Role of mi RNA in phytoremediation of heavy metals and metal induced stress alleviation, International Conference of biotechnology & Biological sciences, BIOSPECTRUM, November, 2021.
9. Talukdar, P., Dutta, D., Ghosh, E., et al, How interaction between aquatic plant and its root microbiota plays a pivotal role in withstanding metal toxicity, International Conference on bioengineering for health and engineering- ICBHE, November, 2021, Sathyabama Institute of Science and Technology.
10. Talukder, P., Chanda, S., et al, Role of plant secondary metabolites in plant-pest interaction, International Conference on bioengineering for health and engineering- ICBHE, November, 2021, Sathyabama Institute of Science and Technology.
11. Talukder, P., Chanda, S., Das, A., Role of plant polyphenolic compounds in combating copper induced stress in *Capsicum annum*, International Conference on bioengineering for health and engineering- ICBHE, November, 2021, Sathyabama Institute of Science and Technology.
12. Ghosh, S., Lahiri, D., Nag, M., Sarkar, T., Ray, R., Evolution of multispecies Biofilm, International Conference of biotechnology & Biological sciences, BIOSPECTRUM, November, 2021.
13. Lahiri, D., Ray, R., Ghosh, S., Dey, A., Sarkar, T., Nag, M., Antibiofilm efficacy of Green-synthesized ZnO Nanoparticles on Oral Biofilm: In-Vitro and In-Silico study, International Conference of biotechnology & Biological sciences, BIOSPECTRUM, November, 2021.
14. Nag, M., Lahiri, D., Dutta, B., et al, Non-invasive techniques for diagnosis of chronic diseases, International Conference of biotechnology & Biological sciences, BIOSPECTRUM, November, 2021.

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Department of Basic Sciences & Humanities

1. Kar Gupta, A., Dutta, K., Dutta, A., Rana, S., Graphene Based Functional Nano-Materials for Bio-Chemical Azo Dyes, 5th International Conference on Electronics, Materials Engineering & Nano-Technology (IEMENTech), September, 2021, pp. 1-8, doi: 10.1109/IEMENTech53263.2021.9614806.
2. Das, N., Dey, A., Beneficial Health Impact of Pranayama and Kriya, International Conference on Physical Education, Yoga and Sports Science in 2021s Era, Kolkata, West Bengal, India, Organized By: State Institute of Physical Education for Women, Hastings House, Alipore, Kolkata, October, 2021

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Department of Electronics & Communication Engineering

1. Banerjee, P., Bhattacharjee, S., Dasgupta, K., Sudden Cardiac Arrest Detection Based on Temporal Features of ECG Using Support Vector Machine classifier, Proceedings of International Conference on Industrial Instrumentation and Control pp 201–208., August, 2021

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Department of Computer Science & Engineering

1. Mukhopadhyay,B., Samanta, T., A Model to Maintain Social Distance in Public Vehicles using 5G V2I and V2P Communication, 2021 IEEE Region 10 Symposium (TENSYP), August, 2021, pp. 1-6, doi: 10.1109/TENSYP52854.2021.9551008.
2. Mukhopadhyay,B., Samanta, T., A Smart Parking-lot Occupancy Model in 5G V2V and V2I Wireless Communication, 2021 IEEE 32nd Annual International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), September, 2021, pp. 1552-1557, doi: 10.1109/PIMRC50174.2021.9569337.
3. Byabarta, N., Chaotopadhyay, A., Mitra, S., Order of Linearities of temperature Sensors: A Comparative Study" International Conference in Sensors and Transducers 2021 (UEMCOS 2021). PP: 33 – 36, September, 2021
4. Roy, S., et al, A Comparative Study On Different Techniques For Classification Of Brain Waves From Eeg Signals, International Conference in Sensors and Transducers 2021 (UEMCOS 2021), September, 2021
5. Roy, S., et al, A Comparative Study On Different Techniques on Emotion Recognition From Eeg Signal, BIOSPECTRUM, November, 2021
6. R Kumar, Mukherjee, R., Pandemic Analysis : An ANN based Approach, International Conference in Sensors and Transducers 2021 (UEMCOS 2021), September, 2021
7. Ghoshal, S., Roy, S., Basak, R., Sentiment Analysis of Human Speech using DNN and CNN, International Conference in Sensors and Transducers 2021 (UEMCOS 2021), September, 2021
8. Ghoshal, S., Roy, S., Basak, R., "Comparative Study on Sentiment Analysis of Human Speech using DNN and CNN" , ICCTA2021 , version 5 (285174 bytes), September, 2021
9. Ghoshal, S., Roy, S., Basak, R., LSB Steganography using Three level Arnold Scram-bling and Pseudo-Random Generator, ICNSBT 2021, International Conference on Network Security & Blockchain Technology, September, 2021
10. Chowdhury;D., CONTOUR - MARKER BASED SEGMENTATION FOR TUMOROUS AND NON-TUMOROUS BRAIN MRI DETECTION 2021, 10th International Conference on Internet of Everything, Microwave Engineering, Communication and Networks, December, 2021
11. Bhattacharya, S., Kundu, S., Mukhopadhyay, B, Bhattacharya, B., Finding A Baseline Machine Learning Model in Sci-Kit Learn Package in Terms of Accuracy and Efficiency, 2021 IEEE Pune Section International Conference (PuneCon), December, 2021, pp. 1-7, doi: 10.1109/PuneCon52575.2021.9686536.
12. Chowdhury, D., Neoteric inception of Emotis as elements in cipher using Emoti cipher algorithm and Buddy Tone Code Identification Method in End-to-end Chatting Application, 10th International Conference on Internet of Everything, Microwave Engineering, Communication and Networks, Publisher: IEEE (2021), December, 2021

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Department of CST/CSIT

1. Ghosh, K., Banerjee, A., Chatterjee, S., Bhattacharjee, M., & Sarkar, A. (2021). Oversampling using Fuzzy Rough Set Theory in Imbalanced Neural based Diabetic patient Readmission Prediction: A hybrid approach. In 2021 International Conference on Computer Communication and Informatics (ICCCI) (pp. 1-5). IEEE., September, 2021
2. Banerjee, A., Ghosh, K., Chatterjee, S., & Sen, D. (2021). FOFO: Fused Oversampling Framework by addressing Outliers. In 2021 International Conference on Emerging Smart Computing and Informatics (ESCI) (pp. 238-242). IEEE., December, 2021
3. Basu, D., Mukherjee, H., Sen, S., Roy, K., Identification of the Dawn or Dusk Ragas, Second International Conference on Advanced Computing and Applications, 2021, December, 2021
4. Ghosh, M., Chatterjee, S., Mukherjee, H., Sen, S., Obaidullah, SK., Text/non-text scene image classification using deep ensemble network, 2nd International Conference on Advanced Computing and Applications, December, 2021
5. Garai, A., Sen, S., Chandra, P., IOT Securities: A Review, International Conference in Sensors and Transducers 2021, September, 2021
6. Chakraborty, S., et. al., Investigation on Different Performance Parameters under Variable Data Rate Conditions in the Presence of Dispersion Compensation of cost-effective Optical Transport Network, International Conference on Innovations in Communication Computing and Sciences, ICCS, August, 2021. (AIP-Scopus indexed)
7. Chakraborty S., et. al., FPGA based MAC units for signal processing algorithms With non-binary numeral system: An effective analysis, 2nd Global conference on Artificial Intelligence and Applications, GCAIA, September, 2021. (Scopus indexed) (CRC Press)
8. Palit, S., Chakraborty, M., Chakraborty, S., et. al., MASKA: Mutual Authentication and Session Key Agreement Protocol in Global Mobility Networks, 2nd Global conference on Artificial Intelligence and Applications, GCAIA, September, 2021. (Scopus indexed) (CRC Press)
9. S.Chakraborty et. Al, Study of Various Classification Approaches including Deep Learning in Heart Disease Prediction, 3rd International Conference on Ubiquitous and Emerging concepts on Sensors and Transducers, October, 2021.
10. Chowdhury, D., Saha, R., Dey, A., Dey, T., Mukherjee, S., ECommerce with Voice Recognition, UEMCOS, September, 2021
11. Majumdar D., Bhattacharjee M., Pal S.B., Chatterjee S., Ganguly R. A Comparative Study Based on Long Short-Term Memory Networks for Assessing Photovoltaic Power. In: Das A.K., Nayak J., Naik B., Dutta S., Pelusi D. (eds) Computational Intelligence in Pattern Recognition. Advances in Intelligent Systems and Computing, vol 1349. Springer, Singapore., September, 2021
12. P. D Choudhury, Multicast Traffic Grooming in Elastic Optical Network under dynamic scenario, UEMCOS, September, 2021, Kolkata, India.
13. Basu Pal S., Majhi, A, Implementing a self Driven Edge Avoiding Robot-----Using Arduino", In UEMCOS, September, 2021, Kolkata, India
14. BasuPal, S., et al, ANALYSIS OF SECURITY AND PRIVACY IN SOCIAL MEDIA PLATFORMS UEMCOS, September, 2021, Kolkata, India, 2021
15. BasuPal, S., et al, A Comparative Analysis on Stock Price Prediction Model using DEEP LEARNING Technology", UEMCOS, September, 2021, Kolkata, India

16. Biswas, A., Roy, P., et al, On analyzing the Twitter usage and sentiment in India during the second wave of COVID-19, 2nd Global Conference on Artificial Intelligence and Applications (GCAIA 2021)UEM, Jaipur, September 8-10, 2021.
17. Bhattacharjee, S., Maity, S., Sen, R., Chatterjee, S., Class biased Sarcasm detection using Variational LSTM Autoencoder IEM-ICDC, November, 2021
18. Maity, S.,Mandal , P., Bhattacharjee, S., Chatterjee S., Variational Autoencoder based Imbalanced Alzheimer detection using Brain MRI Images IEM-ICDC, November, 2021
19. Sarkar, S., Ghosh, A., Chatterjee, S., Multi-sensor data fusion for Occupancy detection using Dempster-Shafer Theory" International Conference on Computational Intelligence in Data Mining (ICCIDM-2021), October, 2021
20. Chakraborty, M. et al, Generation of non-isomorphic connected graphs by successive edge removals from a complete graph, International Conference on Computational Intelligence, Data Science and Cloud Computing (IEM-ICDC 2021), November, 2021
21. Halder, A., Chakraborty. M, A Comprehensive study on blockchain based data security in IoT to build reputation for Intelligent Transport Systems, International Conference on Computational Intelligence, Data Science and Cloud Computing (IEM-ICDC 2021), November, 2021
22. Bhattacharjee, S., Maity, S., Sen, R., Chatterjee, S., Class biased Sarcasm detection using Variational LSTM Autoencoder IEM-ICDC, November, 2021
23. Maity, S., Chatterjee, S., et al, Variational Autoencoder based Imbalanced Alzheimer detection using Brain MRI Images, IEM-ICDC, November, 2021
24. Chakraborty, A., Kundu, P., Chakraborty, S., Predictive analysis of COVID-19 using LSTM and ARIMA Model with various orders in India, IEM-ICDC, November, 2021

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Department of LAW

1. Sarkar, S., Sexual Harassment of women at the workplace: An invasion against women's dignity, International Conference (Ninth Virtual) on Human Rights and Gender Justice, December, 2021Kerala Law Academy, Thiruvananthapuram, Kerala

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Summary

Publications in International and National Conferences

Departments	International/National Conferences August 2021 to December 2021 (Six Months)	July 2020 to December 2021 (Cumulative)
BT	14	18
BSH	2	7
CA	4	13
CSE	12	46
CST/CSIT	24	24
ECE	1	11
EE	4	5
LAW	1	1
TOTAL	62	125

**Books
&
Book Chapters
(August 2021 to December 2021)**

Book Chapter details

Department of Computer Application

1. Introduction to MIoT, Medical Internet of Things: Techniques, Practices and Applications, Kinjal Raykarmakar, Shruti Harrison, Souvik Ghata, and Anirban Das, CRC Press- Taylor & Francis Group, DOI: 10.1201/9780429318078-8, 2021
2. MIoT: Paralyzed Patient Healthcare, Medical Internet of Things: Techniques, Practices and Applications, Kinjal Raykarmakar, Shruti Harrison, and Anirban Das, CRC Press- Taylor & Francis Group, DOI: 10.1201/9780429318078-11, 2021

Department of Computer Science & Engineering

1. Chowdhury, D., Classification of tumorous and non-tumorous brain MRI images based on a deep-convolution neural network model, - Springer Smart Innovation, Systems and Technologies (SIST), 2021

Summary

Publication of Books

Departments	Books August 2021 to December 2021 (Six Months)	July 2020 to December 2021 (Cumulative)
BA	0	2
BSH	0	3
BT	0	2
ECE	0	1
TOTAL	0	8

Publication of Book Chapters

Departments	Book Chapters August 2021 to December 2021 (Six Months)	July 2020 to December 2021 (Cumulative)
BA	0	2
BSH	0	6
BT	0	16
ECE	0	17
CA	2	6
CSE	1	16
LAW	0	3
TOTAL	3	66

Departmental Journals & Magazines

Departmental Journals

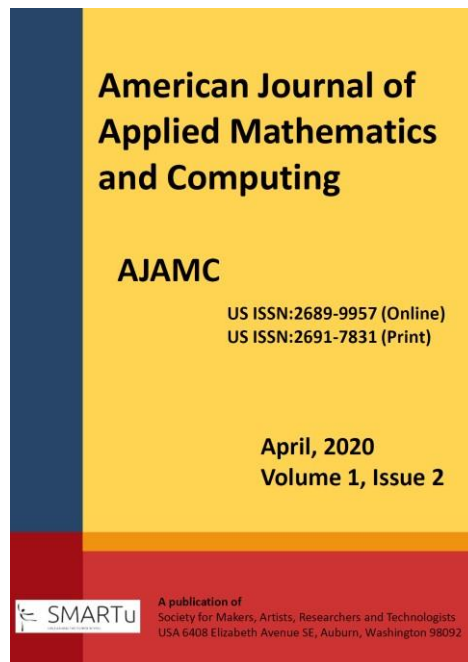
Department of Bio Technology

1. American Journal of Applied Bio-Technology Research(AJABTR), International Journal, published quarterly.

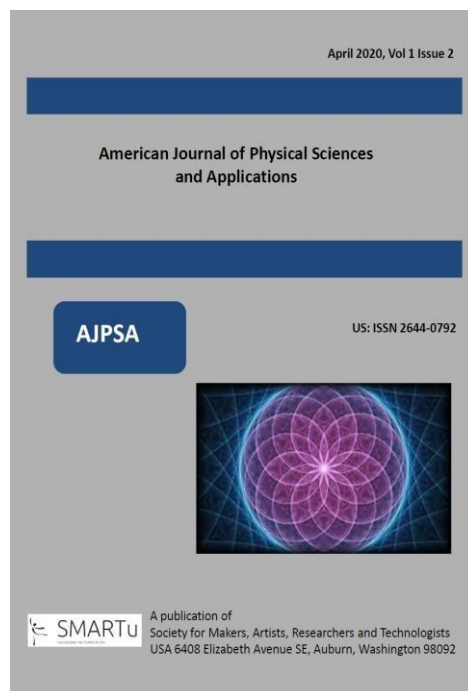


Department of Basic Science& Humanities

2. American Journal of Applied Mathematics and Computing (AJAMC), International Journal, published quarterly.



3. American Journal of Physical Sciences and Applications (AJPSA), International Journal, published quarterly.



PhD Candidates
(Since 2015 onwards)

PhD Enrollment Details

Name of Candidate	Discipline	Enrollment Year	Status
PAMPI MAJUMDER	<i>Basic Science</i>	2017	Pursuing
DIBAKARROY CHODHURY	<i>Bio -Technology</i>	2020	Pursuing
SATABDI PODDAR	<i>Civil</i>	2020	Pursuing
SUBHOJIT PAUL	<i>Electrical</i>	2020	Pursuing
JYOTISEKHAR BANERJEE	<i>Engineering</i>	2015	Awarded (17.01.2021)
KOUSHIK SARKAR	<i>Engineering</i>	2015	Pursuing
PARTHASARATHI GOSWAMI	<i>Engineering</i>	2015	Pursuing
ARPITA CHAKRABORTY	<i>Engineering</i>	2015	Pursuing
ANANJAN MAITI	<i>Engineering</i>	2016	Pursuing
MURARI SHAW	<i>Engineering</i>	2017	Pursuing
SNEHASHISH BHATTACHARJEE	<i>Engineering</i>	2017	Pursuing
NABANITA DAS	<i>Engineering</i>	2017	Pursuing
ANSHULIKA SAHAY	<i>Engineering</i>	2020	Pursuing
ANKAN BHOWMIK	<i>Engineering</i>	2020	Pursuing
GAUTAM PURKAYASTHA	<i>Engineering</i>	2021	Pursuing
ANKUR BISWAS	<i>Engineering</i>	2021	Pursuing
APARAJITA MUKHERJEE	<i>Engineering</i>	2021	Pursuing
AKANKSHA TIWARI	<i>Engineering</i>	2020	Pursuing
SUMANTA CHAKRABORTY	<i>Engineering</i>	2020	Pursuing
APARAJITA MUKHERJEE	<i>Engineering</i>	2020	Pursuing
INDRANIL BANERJEE	<i>Engineering</i>	2020	Pursuing
SHREEJITA MUKHERJEE	<i>Engineering</i>	2021	Pursuing
ANINDITA CHATTERJEE	<i>Engineering-CSE</i>	2016	Pursuing
ARPITA MAZUMDAR	<i>Engineering-CSE</i>	2017	Pursuing
DEBKUMAR CHOWDHURY	<i>Engineering-CSE</i>	2017	Pursuing
RITUPARNA PAL	<i>Engineering-CSE</i>	2017	Pursuing
SAYAN MAJUMDER	<i>Engineering-CSE</i>	2017	Pursuing
SUDIPKUMAR PALIT	<i>Engineering-CSE</i>	2017	Pursuing
SUDIPTO KUMAR MONDAL	<i>Engineering-CSE</i>	2017	Pursuing
SUMANTA DAS	<i>Engineering-CSE</i>	2019	Pursuing
SUSHOVAN CHAUDHURY	<i>Engineering-CSE</i>	2020	Pursuing
BISWADEB BANDYOPADHYAY	<i>Engineering-CSE</i>	2020	Pursuing
SOMNATH BANERJEE	<i>Engineering-CSE</i>	2020	Pursuing
KOUSHIK CHATTERJEE	<i>Engineering-CSE</i>	2020	Pursuing
POULAMI GHOSH	<i>Engineering-CSE</i>	2020	Pursuing
ANANNYA DAS	<i>Engineering-CSE</i>	2020	Pursuing
VARSHA PODDAR	<i>Engineering-CSE</i>	2020	Pursuing

SRESTHA SADHU	Engineering-CSE	2020	Pursuing
SUSMITA CHAKI	Engineering-CSE	2020	Pursuing
SUMITA GHOSH	Engineering-CSE	2020	Pursuing
KAUSTUV BHATTACHARJEE	Engineering-CSE	2020	Pursuing
SAYAN ROY	Engineering-CSE	2020	Pursuing
SOHINI MUKHERJEE	Engineering-CSE	2020	Pursuing
KRISHNA DAS BANERJEE	Engineering-CSE	2020	Pursuing
SUMIT ANAND	Engineering-CSE	2020	Pursuing
AMIT KUMAR DAS	Engineering-CSE	2015	Pursuing
MANAN GUPTA	Engineering-CSE	2015	Pursuing
TAPANKUMAR HAZRA	Engineering-CSE	2017	Pursuing
JAYANTA BHATTACHARYA	Engineering-CSE	2017	Pursuing
SUMAN KUMAR DAS	Engineering-CSE	2017	Pursuing
PARAMITA MITRA	Engineering-CSE	2017	Pursuing
PRADIP KUMAR MAJUMDER	Engineering-CSE	2017	Pursuing
SUJATA GHATAK	Engineering-CSE	2017	Pursuing
PANCHALI BHATTACHARYA	Engineering-CSE	2017	Pursuing
PRATIK GHOSE	Engineering-CSE	2016	Pursuing
SANTONU GHOSH	Engineering-CSE	2017	Pursuing
SUMAN GHOSH	Engineering-CSE	2017	Pursuing
SOUMI SAHA	Engineering-CSE	2020	Pursuing
RUPSA SEN	Engineering-CSE	2020	Pursuing
BAVRABI GHOSH	Engineering-CSE	2020	Pursuing
SOMA BHATTACHARYA	Engineering-CSE	2020	Pursuing
GAUTAM GHOSH	Engineering-ECE	2016	Pursuing
DEBASHIS MAJUMDAR	Engineering-ECE	2017	Pursuing
RAJA BASAK	Engineering-ECE	2020	Pursuing
SNEHASIS PAL	Engineering-ECE	2020	Pursuing
KARUNAMAYEEDY	Engineering-ECE	2020	Pursuing
SOHOM CHAKRABORTY	Engineering-ECE	2020	Pursuing
KAJARI SUR	Engineering-ECE	2020	Pursuing
PARTHASARATHI PAUL	Engineering-ECE	2020	Pursuing
DEBANJANA GHOSH	Engineering-ECE	2020	Pursuing
AMLANPRATIM HAZARIKA	Engineering-ECE	2020	Pursuing
SUBINDU SAHA	Engineering-ECE	2020	Pursuing
PRAKASH BANERJEE	Engineering-ECE	2020	Pursuing
INDRANIL BASU	Engineering-ECE	2020	Pursuing
AMIT KUMAR DAS	Engineering-ECE	2020	Pursuing
SOHAMNANDI RAY	Engineering-ECE	2020	Pursuing
SOUVIK GHOSH	Engineering-ECE	2020	Pursuing
ARUNAVA MUKHOPADHYAY	Engineering-ECE	2017	Pursuing
TAPAN KUMAR RANA	Engineering-ECE	2017	Pursuing

SUBHRO CHAKRABORTY	<i>Engineering-ECE</i>	2015	Pursuing
SURAJIT SUR	<i>Engineering-ECE</i>	2015	Pursuing
ANINDYA GHOSH	<i>Engineering-ECE</i>	2016	Pursuing
SADHUPRA SADKAR	<i>Engineering-ECE</i>	2015	Pursuing
SHYAM SUNDAR KAR	<i>Engineering-Electrical</i>	2020	Pursuing
SUBHRANIL DAS	<i>Engineering-Electrical</i>	2016	Pursuing
GORA CHAKRABARTI	<i>Engineering-Mechanical</i>	2016	Pursuing
AMRIT RAJ	<i>Engineering-Mechanical</i>	2017	Pursuing
ARINDAM GHOSH	<i>Engineering-Mechanical</i>	2017	Pursuing
TAPAS KUMAR BISWAS	<i>Engineering-Mechanical</i>	2020	Pursuing
SANOJDIVA KAR	<i>Engineering-Mechanical</i>	2020	Pursuing
RAJESH PRASAD SARKAR	<i>Engineering-CSE</i>	2016	Pursuing
SUBHABRATA SENGUPTA	<i>Engineering-CSE</i>	2017	Pursuing
RATNA CHAKRABORTY	<i>Engineering-CSE</i>	2017	Pursuing
SUCHANA ROY	<i>Humanities</i>	2020	Pursuing
RAJAT PATHAK	<i>Humanities</i>	2020	Pursuing
NAYANTARA MITRA	<i>Humanities</i>	2020	Pursuing
SUCHISMITA TAGORE MUKHERJEE	<i>Humanities</i>	2021	Pursuing
PATRALIKA BHATTACHARJYA	<i>Humanities</i>	2021	Pursuing
DEEPASHREE DHAR	<i>Humanities- English</i>	2020	Pursuing
DEBOTTAMA ROY	<i>Humanities- English</i>	2020	Pursuing
ABHISHIKTA BHATTACHARJEE	<i>Humanities- English</i>	2020	Pursuing
MOUSUMI PAUL	<i>Humanities- English</i>	2020	Pursuing
RIYA BARUI	<i>Humanities- English</i>	2020	Pursuing
ANKANA GHOSH DASTIDAR	<i>Humanities- English</i>	2020	Pursuing
RIA ROY CHOUDHURY	<i>Humanities- English</i>	2020	Pursuing
SHAKEEB REHAN	<i>Humanities- English</i>	2020	Pursuing
MADHURIMA CHAKRABORTY	<i>Humanities(English)</i>	2020	Pursuing
DEBDOOT MUKHERJEE	<i>Humanities(English)</i>	2021	Pursuing
SAYANTIKA BOSE CHAKRABORTY	<i>Management</i>	2015	Awarded (17.01.2021)
ROOPREKHABAKSI MAITI	<i>Management</i>	2015	Pursuing
PRITHA GHOSH	<i>Management</i>	2015	Pursuing
SANJOY LAHA	<i>Management</i>	2017	Pursuing
UMAMA HAQUE	<i>Management</i>	2017	Pursuing

SHOUVIK CHATTOPADHYAY	Management	2017	Pursuing
AVIJIT BOSE	Management	2017	Pursuing
MITALI SENGUPTA	Management	2017	Pursuing
ASHUTOSH RAI	Management	2017	Pursuing
DIPANKAR DAS	Management	2017	Pursuing
PRITHA DAS	Management	2017	Pursuing
SAMIK DATTA	Management	2017	Pursuing
SHUBHADIP BANERJEE	Management	2017	Pursuing
SAPTAPARNA GHOSH	Management	2017	Pursuing
RAJKUMAR DASGUPTA	Management	2017	Pursuing
UJWALKAKKAD	Management	2019	Pursuing
ABIR GHOSH	Management	2019	Pursuing
JAIKISHOR PRASAD	Management	2017	Pursuing
BIBEKANANDA BANERJEE	Management	2019	Pursuing
S.K.BALASIDDHARTHA	Management	2019	Pursuing
ARUNAVA DALAL	Management	2020	Pursuing
AJAY KUMAR GANGULY	Management	2019	Pursuing
PRATIM CHATTERJEE	Management	2020	Pursuing
PRAGATISUREKA	Management	2020	Pursuing
SUMAN BOSE	Management	2020	Pursuing
KAUSHIK KUMAR GANGULY	Management	2020	Pursuing
ARPAN GANGULY	Management	2020	Pursuing
DIPANNITA CHATTERJEE	Management	2020	Pursuing
AJANTA GHOSH	Management	2020	Pursuing
SOURAV BANERJEE	Management	2020	Pursuing
PEANAK YMRIDHA	Management	2020	Pursuing
SANGHAMITRA CHAKRABARTI	Management	2020	Pursuing
SAUHARDA NANDI	Management	2020	Pursuing
SUMIT BAL	Management	2020	Pursuing
ANUPAM BHATTACHARYA	Management	2020	Pursuing
JOYSRI DATTA	Management	2020	Pursuing
LAVANYADEEPIKA TIGGA	Management	2020	Pursuing
MDMAHDE HASSAN	Management	2020	Pursuing
PIYALI BANERJEE	Management	2020	Pursuing
SOMNATH HAZRA	Management	2020	Pursuing
PRARTHANA BANERJEE	Management	2020	Pursuing
SUPRATIK SINHA	Management	2020	Pursuing
DEVJYOTI DAS	Management	2020	Pursuing
TITLY DHAR	Management	2020	Pursuing
DEBASISH SOM	Management	2016	Pursuing
SUTAPARAY ADHIKARY	Management	2017	Pursuing
SAYANTAN RANA	Management	2017	Pursuing

SHREYASI DATTA	<i>Management</i>	2017	Pursuing
ABHILASHA RAHA	<i>Management</i>	2017	Pursuing
PAULAMINI YOGI	<i>Management</i>	2015	Pursuing
SUMITAVA TALUKDAR	<i>Management</i>	2016	Pursuing
TRISTUP SAHA	<i>Management</i>	2017	Pursuing
SAYANTAN SARKAR	<i>Management</i>	2017	Pursuing
SUHADITYA GUHA	<i>Management</i>	2017	Pursuing
SUBHASRI ROY	<i>Management</i>	2020	Pursuing
AINDRILA CHAKRABORTY	<i>Management</i>	2020	Pursuing
SHIBANI MISHRA	<i>Management</i>	2021	Pursuing
KARTICK DEY	<i>Science</i>	2016	Awarded (17.01.2021)
ANJAN SAMANTA	<i>Science</i>	2021	Pursuing
AVIJIT NEMU	<i>Science- Mathematics</i>	2020	Pursuing
DOYEL SARKAR	<i>Science- Mathematics</i>	2020	Pursuing
ABHIJITKAR GUPTA	<i>Science-Physics</i>	2017	Pursuing
PRABIR KUMAR DAS	<i>Science-> EngineeringECE</i>	2017	Pursuing
MURARI SHAW	<i>Engineering-ECE</i>	2017	Awarded (2021)
ANANJAN MAITI	<i>Engineering-CSE</i>	2016	Awarded (2021)
PARTHA SARATHI GOSWAMI	<i>Engineering-CSE</i>	2015	Awarded (2021)
ARPITA CHAKRABORTY	<i>Engineering-ECE</i>	2015	Awarded (2022)
RESHMI BOSE	<i>Science</i>	2022	Pursuing
JAYANTA BOSE	<i>Engineering-ECE</i>	2022	Pursuing
SOUMEN CHAKRABORTY	<i>Engineering-CSE</i>	2022	Pursuing
SHREYASI DATTA	<i>Humanities</i>	2022	Pursuing
PRIYA RANJAN OJHA	<i>Humanities</i>	2022	Pursuing

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Summary:

Ph.D Candidates	August 2021 to December 2021	2015 to December 2021
Pursuing	173	173
Awarded	4	7

**Publications
Of
PhD scholars
(Since 2015 onwards)**

List of Publications:

- 1. Immigration, Diaspora and Home: Does life give a second chance?**
Sayantika Bose Chakraborty, Dr. Saptorshi Das
International Research Journal of Management Sociology & Humanities
ISSN 2277 – 9809 (online); ISSN 2348 - 9359 (Print)
Vol.10, Issue 11 [2019]
- 2. The me of Exile in Literature Down the Ages**
Sayantika Bose Chakraborty, Dr. Saptorshi Das
International Journal of Humanities and Social Science
Invention ISSN (Online): 2319 – 7722, ISSN (Print): 2319 – 7714
Vol.6, Issue 9, PP.29-30 [2017]
- 3. THE CINEMATIC ADAPTATION OF CHITRA BANERJEE DIVAKARUNI'S THE MISTRESS OF SPICES**
Sayantika Bose Chakraborty, Dr. Saptorshi Das
International Journal of Recent Research in Social Sciences and Humanities (IJRSSH) ISSN 2349-7831
Vol.3, Issue 3, pp:(1-5), Month: July-September 2016
- 4. Nalayani: An Immortal Saga of Femininity and Feminism**
Sayantika Bose Chakraborty, Dr. Saptorshi Das
Shakespeare Society of Eastern India and TAGORE-GANDHI INSTITUTE FOR CULTURE STUDIES & SERVICE-LEARNING collaboration with ICCR, Kolkata on Sanskrit Epics (Mahabharata and Ramayana) and global classical literatures on 8th and 9th September, 2018
- 5. Social Media and English**
Sayantika Bose Chakraborty
12th International and 48th Annual ELT@I Conference at St. Teresa's College (Autonomous), Ernakulam, Kerala
- 6. Dynamic Versus Static rebates: an investigation on price, displayed stock level, and rebate-induced demand using a hybrid bat algorithm**
Kartick Dey, Debajyoti Chatterjee, Subrata Saha, Ilkyeong Moon
Annals of Operations Research – Springer US
Abstracting and Indexing: Science Citation Index
- 7. Strategic Inventory: Manufacturer vs. Retailer Investment**
Ilkyeong Moon, Kartick Dey, Subrata Saha
Transportation Research Part E: Logistics and Transportation Review – Elsevier Indexing: Scopus
- 8. Influence of procurement decisions in two-period green supply chain**
Kartick Dey, Subrata Saha
Journal of Cleaner Production – Elsevier
Indexing: Science Citation Index Expanded

9. **The impact of strategic inventory and procurement strategies on green product design in a two-period supply chain**
Kartick Dey, Sankhadip Roy, Subrata Saha
International Journal of Production Research–Taylor & Francis Indexing:
Science Citation Index
10. **Replenishment decision of are tailer under price - inventory-and dynamic rebateinduced demand**
International Conference on Business Analytics and Intelligence (ICBAI - 2016) Organized by ORSI & ASI at Indian Institute of Science Bangalore
11. **Investment and Coordination Decisions in a Supply Chain of Agricultural Products** International Conference on Advancing Frontiers in Operational Research: Towards a Sustainable World (AFOR - 2017)
Organized by ORSIat Heritage Institute of Technology, Kolkata
12. **Green Manufacturing in a decentralized supply chain**
2nd International Conference on Information Technology and Applied Mathematics(ICITAM 2019)
Organized by School of Electronics, Computer Science and Informatics, HIT at Haldia Institute of Technology (HIT), Haldia, West Bengal
13. **ReliableBest-RelaySelectionforSecondaryTransmissioninCo-operationBased Cognitive Radio Systems: A Multi-Criteria Approach**
J.S.Banerjee, A.Chakraborty,and A. Chattopadhyay
Journal of Mechanics of Continua and Mathematical Sciences,13(2),(pp.24-42),2018,(Web of Science)
14. **A Novel Best Relay Selection Protocol for Cooperative Cognitive Radio Systems using Fuzzy AHP**
J.S.Banerjee, A.Chakraborty,and A. Chattopadhyay
Journa lof Mechanics of Continua and Mathematical Sciences,13(2),(pp.72-87),2018,(Web of Science)
15. **A Decision Model for Selecting Best Reliable Relay Queue for Cooperative Relaying: The Extent Analysis Based FAHP Solution** (Communicated)
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16. **Non-uniform Quantized Data Fusion Rule for Data Rate Saving and Reducing Control Channel Overhead for Cooperative Spectrum Sensing in Cognitive Radio Networks**
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17. **Malicious Node restricted Non Uniform Quantized Data Fusion scheme for Trustworthy Spectrum Sensing in Cognitive Radio Networks**(to be Communicated, 2019)
Chakraborty, J.S.Banerjee,and A. Chattopadhyay
18. **An advance Q learning(AQL) approach for path planning and obstacle avoidance of a mobile robot**
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19. A comparative study on cognitive radio implementation issues

J.S.Banerjee, & K.Karmakar

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45(15),44-51,2012,(EBSCO,GoogleScholarInformatics,NASAADS,CiteSeer,UlrichWeb,)

20. Fundamentals of Software Defined Radio and Cooperative Spectrum Sensing: A Step Ahead of Cognitive Radio Networks

J.S.Banerjee, A.Chakraborty

In Handbook of Research on Software. Defined and Cognitive Radio Technologies for Dynamic Spectrum Management (pp. 499-543). IGI Global, 2015, (Scopus)

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J.S.Banerjee, A.Chakraborty

In M.H. Rehmani & Y. Faheem (Ed.), Cognitive Radio Sensor Networks: Applications, Architectures, and Challenges(pp.127-158).Hershey PA:IGIGlobal, 2014, (Scopus)

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23. Fuzzy based relay selection for secondary transmission in cooperative cognitive radio networks

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24. Relay node selection using analytical hierarchy process(AHP)for secondary transmission in multi-user cooperative cognitive radio systems

J.S.Banerjee, A.Chakraborty,and A. Chattopadhyay

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25. Non-Uniform Quantized Data Fusion Rule Alleviating Control Channel Overhead for Cooperative Spectrum Sensing in Cognitive Radio Networks

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26. A fuzzy AHP-Based relay node selection protocol for wireless body area networks(WBAN)

S.Paul, A.Chakraborty,& J.SBanerjee

In 2017 4th International Conference on Opto-Electronics and Applied Optics (Optronix)(pP. 1-6). IEEE, 2017, November, (ISI Proceedings, Scopus)

27. **The extent analysis based fuzzy AHP approach for relay selection in WBAN**
S.Paul,A.Chakraborty,& J.SBanerjee
In Cognitive Informatics and Soft Computing(pp.331-341). Springer, Singapore,2019,(ISI Proceedings, Scopus)
28. **A decision framework of IT-based stream selection using analytical hierarchy process (AHP) for admission in technical institutions**
O.Saha,Chakraborty,& J.SBanerjee
In 2017 4th International Conference on Opto-Electronics and Applied Optics(Optronix)(pp. 1-6). IEEE, 2017, November, (ISI Proceedings, Scopus)
29. **A fuzzy AHP approach to IT-based stream selection for admission in technical institutions in India**
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In Emerging Technologies in Data Mining and Information Security(pp.847-858).Springer, Singapore, 2019, (ISI Proceedings, Scopus)
30. **OPNET: a new paradigm for simulation of advanced communication systems**
J.SBanerjee,D.Goswami,&S.Nandi
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31. **Impact of machine learning in various network security applications**
J. Banerjee, S. Maiti, S. Chakraborty, S. Dutta, A. Chakraborty, J. S Banerjee In Proc.ICCMC 2019(accepted),IEEE,2019,(ISI Proceedings, Scopus)
32. **WBAN: A Smart Approach to Next Generation e- healthcare System**
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33. **Facial expression recognition for human computer interaction**
J.Chattopadhyay, S.Kundu, A.Chakraborty, J.S.Banerjee
In Proc.ICCVBIC 2018.Springer(press),2018,(ISI Proceedings, Scopus)
34. **A compact circularly polarized isosceles striangular microstrip patch antenna with parasitic elements for Multi-band application**
MurariShaw ,NiranjanMandal, Malay Gangopadhyay
Microwave
And Optical Technology Letters(ISSN:0895-2477)
35. **A low profile miniaturized circular microstrip patch antenna for Dual-band application**
Murari Shaw, Niranjan Mandal, Malay Gangopadhyay
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36. **Dual band triangular patch antenna for land & maritime military communication system and WLAN5.8GHz application**
Dipra Chakravorty; Saurav Kumar Singh ;Paramveer Singh; Indranil Roy; Anubhab Banerjee ; Murari Shaw ; Malay Gangopadhyay
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- 37. A simple Starshaped Microstrip Patch Antenna for pentaband application**
 Murari Shaw;Dipra Chakravorty;Saahil Islam;Malay Gangopadhyaya
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- 38. Circular Microstrip Patch Antenna with U-slots for multiband application**
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- 39. Triple band V-slotted Pentagonal Microstrip Patch Antenna**
 Murari Shaw;Subham Kundu;Tithi Ghosh;Subhayan Das;SannoyMitra
 ;Malay Gangopadhyay
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- 40. V-slots Circular Microstrip Patch Antenna for triple band application**
 Murari Shaw;Sannoy Mitra;Malay Gangopadhyay
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- 41. A compact circularly polarized isosceles triangular microstrip patch antenna with parasitic elements for multiband application**
 M. Shaw, N. Mandal and M. Gangopadhyay
 Microwave and Optical Technology Letters,
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 M. Shaw,N.Mandal and M.Gangopadhyay
 Frequenz,vol.74,no.9-10,pp.333-349,2020,doi:10.1515/freq-2020-0003.
- 43. A compact polarization reconfigurable stacked microstrip antenna for WiMAX application**
 M.Shaw, N.Mandal and M.Gangopadhyay
 International Journal of Microwave and Wireless Technologies,
 pp.1-16, 2020, doi:10.1017/S175907872000 1567.
- 44. A wideband hexagonal microstrip patch antenna with linear and circular polarization for multiband application**
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46. Dualbandtriangularpatchantennaforland&maritimemilitarycommunication system and WLAN 5.8GHz application

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48. Circular Microstrip Patch Antenna with U-slots for multiband application

M.Shaw, B.Deb and N.Mandal
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49. Triple band V-slotted Pentagonal Microstrip Patch Antenna

M.Shaw, S.Kundu, T.Ghosh, S.Das, S.Mitra and M.Gangopadhyay
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50. V-slots Circular Microstrip Patch Antenna for triple band application

M.Shaw, S.Mitra and M.Gangopadhyay
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51. A simple miniaturized wide band equilateral triangular microstrip patch antenna

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52. Simulating a solar cellatvaried Schottky height sinvarious BSFs and absorber thicknesses

KSarkar, K K Ghosh
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53. Effect of TCO, BSF and Back contact Barrier on CdS/CdTe solar cell: Modeling and Simulation

KSarkar, KKGhosh, NK Mandal
JMCMS, journal-article, DOI: 10.26782/jmcms.2018.04.00009 [ESCI, WoS]

54. Effect of pinhole and its recovery in CdS/CdTe solar cell through fabrication Simulation

KSarkar, K K Ghosh
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55. Effects of very thin CdS window layer on CdTe solar cell

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Vol.-14, No.-3, journal-article, JMCMS, DOI: 10.26782/jmcms.2019.06.00002 [ESCI, WoS]

56. Se induced CdTe solar cell: A simulated study on structure and properties

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57. Optimization of the window layer in CdTe solar cell

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58. Optimal Designing of Higher Efficiency Chalcogenide Thin Film Solar Cell

K Sarkar
Part of the Springer Proceedings in Physics book series (SPPHY, volume 194), conference-paper, DOI: 10.1007/978-981-10-3908-9_22 [Scopus and Clarivate analytics, WoS]

59. A review: Thin-Film CdTe/CdS Solar Cell Technology

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60. A Review on Energy Harvesting from Various Non-conventional

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61. A REVIEW ON INDIA'S POTENTIAL OF SOLAR ENERGY

K Sarkar
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62. A REVIEW ON SOLAR CELL

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63. Classification of Melanoma Through Fused Color Features and Deep Neural Network

Ananjan Maiti, Himadri Shekhar Giri, Biswajoy Chatterjee, Venkatesan Rajnikanth, Fuqian Shi, Nilanjan Dey

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64. The Effect of Different Feature Selection Methods for Classification of Melanoma

Ananjan Maiti, Biswajoy Chatterjee

65. Skin Cancer Classification through Quantized color features and Generative Adversarial Network

Ananjan Maiti, Biswajoy Chatterjee, K.C. Santosh

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66. Improving detection of Melanoma and Naevus with deep neural networks

Ananjan Maiti, Biswajoy Chatterjee

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67. Computer-aided Diagnosis of Melanoma: A Review of Existing Knowledge and Strategies

Ananjan Maiti, Biswajoy Chatterjee, Amira S. Ashour, Nilanjan Dey

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68. An Improved K-NN Algorithm Through Class Discernibility and Cohesiveness

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70. Investigation of Dataset from Diabetic Retinopathy Through Discernibility-Based k-NN Algorithm

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74. Quantum Key Distribution Protocol for Knapsack Cryptosystem

Partha Sarathi Goswami, Tamal Chakraborty, Abir Chattopadhyay
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76. A Novel Quantum DNA Cipher using Fermat Numbers

Partha Sarathi Goswami, Tamal Chakraborty, Abir Chattopadhyay Sey Bold
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80. Godel Code Encoding for Quantum Key Distribution Protocol using DNA Mapping

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81. Non-uniform quantized data fusion rule for data rate saving and reducing control channel overhead for cooperative spectrum sensing in cognitive radio networks

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83. Malicious node restricted quantized data fusion scheme for trustworthy spectrum sensing in cognitive radio networks

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84. Reliable best-relay selection for secondary transmission in co-operation based cognitive radio systems: a multi-criteria approach

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85. A novel best relay selection protocol for cooperative cognitive radio systems using fuzzy AHP

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87. Relay node selection using analytical hierarchy process (AHP) for secondary transmission in multi-user cooperative cognitive radio systems

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88. Fuzzy Based Relay Selection for Secondary Transmission in Cooperative Cognitive Radio Networks

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89. Optimizing the role of organizational commitment: A qualitative study in the school education sector.

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90. Antecedents and consequences of organizational commitment in school education sector.

Maiti, R. B., Sanyal, S. N. & Mazumder, R. (2021).
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91. Organizational Commitment of Working Women: The Role Optimization. International Journal of Management Practice.

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92. Women in Information Technology: How Organizationally Committed they are.

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Subhabrata Sengupta

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Indexing: Google Scholar, ProQuest, ULRICHSWEB, CiteSeer, EBSCO.

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154. A study on the consumers’ satisfaction of fintech solutions provided by an Indian Major Bank during Covid times

Ajay Kumar Ganguly

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155. Impact of Moratorium On Consumer Demographic Profile: Case Study On ICICI Bank Home Loan Customer

Ajay Kumar ganguly

Calcutta Business School–Under Review

156. Bank Employees Perception on Technology Adoption in Banks: An Emperical

Study on Two Major Private Banks

Ajay Kumar Ganguly

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Ratna Chakrabarty, NK Mandal

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158. A Novel Design of Flip-Flop Circuits using Quantum Dot Cellular Automata (QCA)

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159. Design of 2's Complement 4-bit binary Numbers Using Quantum Dot Cellular Automata

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160. Design of Binary to Gray Code Converter for error Correction in Communication Systems Using Layered Quantum Dot Cellular Automata

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161. Design and of Operational Amplifier using Quantum Dot Cellular Automata

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162. Design of Master Slave flip flop in Quantum Dot Cellular Automata (QCA)

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163. Design of a Controllable Adder-Subtractor circuit using Quantum Dot Cellular

Automata" Ratna Chakrabarty, N K Mandal

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164. Design and simulation of a Tristate Buffer circuit in Quantum Dot Cellular Automata

Ratna Chakrabarty, NK Mandal

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Ratna Chakrabarty, NK Mandal,

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167. Assessing communication issues on the basis of Personality, Perceived Stress, Family Environment and Self-Esteem of Individuals with and without Substance Related Disorders

Pragati Sureka

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Vol3,No.3, April–2021, pp.1818-1934, doi: doi.org/10.15864/ijelts.3112

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**Externally Funded
Research Projects
(August 2021 to December 2021)**

Funded Research Details

Department of BioTechnology

Project Name	Funding Agency Name	Application Date	Principal Investigator	Amount	Status
Biochemical studies on production of N-acyl homoserine lactonase and evaluation of its quorum quenching activities on food and feed spoilage bacteria	SEED (DST) (Young Scientists and Technologists)	30th Nov,2021	Dr. Moupriya Nag	Rs 2174700/-	under review
Evaluation of antimicrobial and antibiofilm activities of phytocompounds from <i>Tinospora</i> spp against ESKAPE bacterial strains	SEED (DST) (Young Scientists and Technologists)	29th Nov,2021	Dibyajit Lahiri	Rs 1910000/-	under review

Department of Basic Science & Humanities

	Project Name	Funding Agency Name	Application Date	Principal Investigator	Amount	Sanctioned Amount	Status
1	Noble agro-waste derived biosafe carbon nanodots for theragnostic applications in cancer Submitted to Royal Society of Chemistry fund	Basic Science	Royal Society of Chemistry UK.	14th May, 2021	Dr. Suvadra Das	4000 pound	Grant released Rs. 397163/-
2	Preparing environmentally friendly non materials from environmental pollutants and using them in green energy production	Basic Science	TAIF University, Al Hawaiyah, UAE	24 th March, 2021	Dr. Tanay Pramanik	\$50,000.00(US D)	Granted

Department of Electronics & Communication Engineering

Project Name	Funding Agency Name	Application Date	Principal Investigator	Amount	Status
Neural Network Based Linearizing Circuit	DST(SERB)	16thMarch, 2021	A. Chattopadhyay	Rs.36,92,000/-	Applied

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Summary:

Externally Funded Research Projects	August 2021 to December 2021	2015 to December 2021
Applied	1	7
Under Review	2	3
Granted	2	2
Completed	0	1
Total	5	13

**Grant In Aid
Research Projects
Funded by IEM
Trust
(Since 2019 onwards)**

Grant In Aid Projects:**Department of Bio-Technology:**

Name of the faculty as PI	Title of the Research Project	Amount of the Grant received (INR)	Date of Commencement
Dr. Susmita Mukherjee	To develop and analyse the potential fertilizer formulation for reduced arsenic uptake by plants	80000	08-01-2019
Dr. Moupriya Nag	Efficacy of Green Synthesized Zinc oxide Nanoparticle against dental biofilm: formulation of a smart mouth wash	105000	08-01-2019
Dr. Pratik Talukder	Chlorogenic acid, one of the most important secondary metabolite of brinjal can be potential biopesticide for the biocontrol of brinjal shoot and fruit borer pest	150000	08-01-2019

Department of Mechanical Engineering:

Name of the faculty as PI	Title of the Research Project	Amount of the Grant received (INR)	Date of Commencement
Dr. Goutam Paul	Investigation on Machinability of Graphene reinforced Al alloys under cryogenic & MQCL condition	296710	07-11-2019

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Summary:

Grant in Aid	August 2021 to December 2021	2015 to December 2021
Granted	0	4

Patents Filed
(Since 2016 onwards)

PatentsFiled/Published/Granted

Sl. No.	Filing Date	Patent File Number	Title	Status	Faculty members as Inventors
1	12.09.2019	201931036822	<i>Mango jelly with citrus peel extracted pectin – a novel natural product enhancing the total antioxidant value</i>	Published	Dr. Sonali Paul, Dr. Susmita Mukherjee
2	04.11.2019	201931044618	<i>A Novel Composition of Multifunctional (antimicrobial, digestive, natural food life enhancer) Low Cost Herbal Food Additive</i>	Patent application filed	Dr. Biswadeep Chaudhuri, Dr. Pratik Talukder, Dr. Susmita Mukherjee
3	02.04.2021	202131015750	Assessment of an effective remedial measure against arsenic overload in the affected population of West Bengal	Patent application filed	Dr. Susmita Mukherjee, Dr. Sonali Paul
4	02.04.2021	202131015750	<i>Assessment of an effective remedial measure against arsenic overload in the affected population of West Bengal</i>	Patent application filed	Dr. Susmita Mukherjee, Dr. Sonali Paul
5	21.04.2021	2021100831	<i>Aqua Plus- A Humidity Dependent Water Extraction Method</i>	AUSTRALIAN PATENT GRANTED	Dr Tanay Pramanik
6	16.06.2021	2021102598	<i>A Wearable Electro Acupuncture Device for COVID Treatment</i>	AUSTRALIAN PATENT GRANTED	Dr Tanay Pramanik
7	27.01.2021	202131003524	VOID PNEUMA, AN ARTIFICIAL LEAF FOR CREATING PROPER OXYGEN CONDITIONS IN MINES	Patent application filed	Anirban Das
8	27.01.2021	202131003522	TRISTRAM-ENIGMA: THE CODE TO CREATE HEALTHY CITIES	Patent application filed	Anirban Das
9	27.01.2021	202131003528	TOUCH-N-CARE: A GEL TO HEAL SKIN	Patent application filed	Anirban Das
10	27.01.2021	202131003529	THUNDER-HOUND, AN UNDER-WATER MINING SUPER-STRUCTURE IN THE INDIAN OCEAN	Patent application filed	Anirban Das
11	27.01.2021	202131003527	STEELASTIC: A MEDICAL WASTE RECYCLED ECO-ALLOY FOR INFRASTRUCTURAL REENGINEERING	Patent application filed	Anirban Das

12	27.01.2021	202131003535	<i>STAR-DUST: HEALING HUMONGOUS WATERS</i>	Patent application filed	Anirban Das
13	27.01.2021	202131003520	<i>SHATTERED-STAR: A TECHNIQUE TO ENERGY-HEALING</i>	Patent application filed	Anirban Das
14	27.01.2021	202131003517	<i>MOQ-E: THE MOSQUITO ERADI-NIZER</i>	Patent application filed	Anirban Das
15	27.01.2021	202131003519	<i>MOKSHA-AMRITAM, A MIRACULOUS IMMUNITY THERAPEUTIC</i>	Patent application filed	Anirban Das
16	27.01.2021	202131003530	<i>JUXTA-RING, A PATTERN TO CREATE EFFECTIVE SPIDER-SILK FABRICS</i>	Patent application filed	Anirban Das
17	27.01.2021	202131003536	<i>JEJUNE: AN IMMUNO BOOSTER</i>	Patent application filed	Anirban Das
18	27.01.2021	202131003518	<i>INFANTILE: AN ANTIMICROBIAL AQUEOUS SOLUTION</i>	Patent application filed	Anirban Das
19	27.01.2021	202131003532	<i>IMMUNO-CO: A THERAPEUTIC FOR CLEANSING HIGH TOXICITY</i>	Patent application filed	Anirban Das
20	27.01.2021	202131003523	<i>HEAL-DESTINY: A ROUTE TO HEALTHY CLOSED SPACES</i>	Patent application filed	Anirban Das

21	27.01.2021	202131003525	<i>GREENY, AN ARTIFICIAL LEAF TO CLEANSE THE AIR AND SAVE OXYGEN DEFICIT ZONES</i>	Patent application filed	Anirban Das
22	27.01.2021	202131003531	<i>FANTASY-LAND: HEALING THE LITHOSPHERE</i>	Patent application filed	Anirban Das
23	27.01.2021	202131003521	<i>Exillr-Prime: A multi-purpose edible sterilizer for cleansing body inside out</i>	Patent application filed	Anirban Das
24	27.01.2021	202131003526	<i>DELTA:RE, AN FLAVONOID BASED IMMUNITY BOOSTER</i>	Patent application filed	Anirban Das
25	27.01.2021	202131003533	<i>BOUND-ROSE: THE STRONGEST TECHNIQUE TO ENERGY HEALING</i>	Patent application filed	Anirban Das
26	27.01.2021	202131003510	<i>AZURE, AN ARTIFICIAL LEAF TO SAVE MARINE ECOSYSTEMS</i>	Patent application filed	Anirban Das
27	27.01.2021	202131003581	<i>AVYATHI, A NEW DEFINITION TO OXYGEN CREATION AND FUEL PRODUCTION IN SPACE</i>	Patent application filed	Anirban Das
28	27.01.2021	202131003588	<i>ARISTA: A THERAPEUTIC FOR SAFE AND PAINLESS MONTH</i>	Patent application filed	Anirban Das
29	27.01.2021	202131003579	<i>ANDROMEDA, A WATER PROGRAMMING TECHNIQUE TO HEAL BODY AND MIND</i>	Patent application filed	Anirban Das

30	27.01.2021	202131003584	<i>AMUN & ANAN, A RING FOR MEDICAL DIAGNOSIS IN EXIGENCY AND COMMUNIQUE</i>	Patent application filed	Anirban Das
31	27.01.2021	202131003582	<i>AQUAPONICS USING ARDUINO BASED SMART CULTIVATION SYSTEM FUNCTIONING WITH RENEWABLE SOLAR ENERGY</i>	Patent application filed	Anirban Das
32	27.01.2021	202131003587	<i>INTELLIBIN: INTELLIGENT BIN WITH CREDIT POINT INTEGRATION</i>	Patent application filed	Anirban Das
33	27.01.2021	202131003583	<i>FOODOPE: THE DIGITAL INDIA RATION ATM.</i>	Patent application filed	Anirban Das
34	27.01.2021	202131003594	<i>SUJALAM: A MOBILE AQUA DECONTAMINATION DEVICE</i>	Patent application filed	Anirban Das
35	27.01.2021	202131003580	<i>A SOUND DETECTION DEVICE FOR DEAF THROUGH MASTOID BONE CONDUCTION</i>	Patent application filed	Anirban Das
36	27.01.2021	202131003592	<i>An Intelligent Helmet to detect toxic, flammable, suffocating gases and heat hazards in under earth mines</i>	Patent application filed	Anirban Das
37	27.01.2021	202131003593	<i>Nodal Wireless Communication System for Monitoring Environmental Data Fluctuations in Underground Mines</i>	Patent application filed	Anirban Das
38	27.01.2021	202131003585	<i>RAKSHAK: A PRECAUTIONARY DEVICE TO PROTECT THE COMMON MAN</i>	Patent application filed	Anirban Das

39	27.01.2021	202131003595	<i>Carefree Sole, a multi medicated waterproof device, triggered to stimulate foot nerve points for treatment and relief through vibrator motors</i>	Patent application filed	Anirban Das
40	27.01.2021	202131003577	<i>Phoenix: A SMART DEVICE TO PREVENT ELECTROCUTION FROM FALLEN ELECTRIC POSTS</i>	Patent application filed	Anirban Das
41	27.01.2021	202131003590	<i>THE GABINETTO: AN NANO INTELLIGENT SANITARY HYGIENE DEVICE</i>	Patent application filed	Anirban Das
42	20.05.2019	201911019831	<i>A novel approach to realize business profit on the basis of linear dependency, exponential growth and moving average</i>	Published	Anirban Das
43	30.10.2019	201931043975	<i>RYO, an intelligent rover to send stress signals in emergency through 360 degree single hemispheric surveillance</i>	Patent application filed	Anirban Das
44	30.10.2019	201931043976	<i>VRTRA JABBERWOKY, an Intelligent hexa-copter to identify individuals through DNA and Tissue classification</i>	Patent application filed	Anirban Das
45	30.10.2019	201931043977	<i>An MIOT based Technique to detect the Probability of Brain Cancer through Extraction, Isolation And PCR</i>	Patent application filed	Anirban Das
46	30.10.2019	201931043978	<i>A tri folded Intelligent System to pre-monitor and predict tsunami, flood and earthquake based disasters and guide safer directions prior to occurrence</i>	Patent application filed	Anirban Das
47	30.10.2019	201911043980	<i>A decentralized system to rescue victims from natural and manmade post disasters through DTN, Offline Route Builder and Tracker</i>	Patent application filed	Anirban Das

48	06.01.2021	2020104352	<i>FUTURE SUMMER TEMPERATURE AVERAGE PREDICTION FROM AIR TEMPERATURE RATE DATA</i>	AUSTRIAN PATENT GRANTED	Anirban Das
49	25.11.2019	201911048042	<i>Security and computational time complexity analysis of RSA with novel approach of variability concept of key</i>	Patent application filed	Anirban Das
50	20.01.2020	202011002303	<i>A Method for Security Enhancement of Diffie-Hellman Key Exchange Protocol</i>	Patent application filed	Anirban Das
51	24.02.2020	202011007658	<i>A technique for implementing security protocol using variable key for Diffie –Hellman Key exchange, arbitrated protocol and cipher using imaginary variable concept</i>	Patent application filed	Anirban Das
52	05.05.2020	202011019051	<i>A technique for implementing security protocol using variable key in context to key sequence, curves and AES</i>	Patent application filed	Anirban Das
53	11.08.2020	202041034535	<i>IoT and Sensors Based System and Method for Artificial Kidney</i>	Patent application filed	Anirban Das
54	24.04.2021	202131019215	<i>OPALBLUE: PRESERVING NATURAL WATER BODIES CHEMICALLY, PHYSICALLY AND ECOLOGICALLY</i>	Patent application filed	Anirban Das
55	24.04.2021	202131019216	<i>PsychED: A Medical Device for Healing psychological traumas and Issues</i>	Patent application filed	Anirban Das
56	24.04.2021	202131019217	<i>Titanoboa: An Outer Space Thermal Protection System (OSTPS)</i>	Patent application filed	Anirban Das

57	21.04.2021	2021101252	<i>Localization method using integrated sensors in autonomous scrubbing robots for industrial cleaning</i>	AUSTRA LIAN PATENT GRANTE D	Anirban Das
58	31.05.2021	202141024307	<i>System and Method to detect fake profiles in Social Media</i>	Published	Anirban Das
59	16.06.2021	202141026824	<i>Sensor Based Intelligent Robotic Arm to Vaccinate People Against COVID-19</i>	Published	Anirban Das
60	24.06.2021	202141028360	<i>Smart Protective Personal Equipment (PPE Kit) for Healthcare Workers during COVID-19 pandemic</i>	Published	Anirban Das
61	03.07.2021	202111029975	<i>Sensor Based Artificial Nervous System to assist Paralyzed People</i>	Patent application filed	Anirban Das
62	16.06.2021	2021102531	<i>Three Dimensional wind, airspeed calculation, and prediction method for aerial drones using deep learning</i>	AUSTRA LIAN PATENT GRANTE D	Anirban Das
63	21.07.2021	202141032739	<i>System and Method for performing Secure Transactions of Digital Cryptocurrencies using Blockchain Technology</i>	Patent application filed	Anirban Das
64	27.01.2021	202131003539	ISOAP: NO-TOUCH I.O.T SOAP DISPENSER SYSTEM	Patent application filed	Subhalaxmi Chakraborty
65	27.01.2021	202131003537	SMART PORTABLE LOCK WITH EMBEDDED SECURITY AND ALERTING SYSTEM	Patent application filed	Bipasha Mukhopadhyay

66	26.04.2019	201931016807	<i>ELECTRIC TWO-WHEELER DELIVERY VEHICLE WITH SECURE DELIVERY BOX</i>	Patent application filed	NA
67	13.05.2016	201631012538	<i>PHYSICAL DESIGN APPROACH OF A NOVEL ARCHITECTURE OF A JUNCTION-LESS TRANSISTOR HAVING HIGH K-SPACERS</i>	First Examination complete	Dr.Rajiv Ganguly
68	17.03.2017	201631027479	<i>IMPLEMENTATION OF SILICON-ON-INSULATOR(SOI) BASED POWER JUNCTION- LESS TRANSISTOR DEVICE SWITCHING IN SWITCH MODE POWER SUPPLY(SMPS) CIRCUIT.</i>	Published	Dr.Rajiv Ganguly
69	26.04.2019	201931016810	<i>MICROCONTROLLER BASED DESIGN OF HOME CLEANING ROBOT</i>	Patent application filed	Piyali Mukherjee
70	14.05.2019	201931019095	<i>SIMULATION BASED DESIGN OF HOME CLEANING ROBOT</i>	Patent application filed	Piyali Mukherjee
71	14.05.2019	201931019094	<i>SMART STREET LIGHT USING ARDUINO</i>	Patent application filed	Sohom Chakraborty
72	26.04.2019	201931016808	<i>LOW-COST PLASTIC COLLECTOR AND INSTANT MONEY RETURN MACHINE</i>	Patent application filed	Dr. Tanusree Roy
73	14.05.2019	201931019093	<i>IOT BASED INDUSTRIAL SECURITY SYSTEM USING ARDUINO</i>	Patent application filed	Nilanjan Byabarta, Prakash Banerjee

74	15.06.2018	201831015427	<i>ELECTROMAGNETIC ALTERNATOR ENGINE/ELECTRICAL</i>	Published	NA
75	26.04.2019	201931016809	<i>AUTOMATION & IOT BASED SMART GARDENING AND IRRIGATION SYSTEM FOR GROWING PLANTS</i>	Patent application filed	NA
76	16.03.2020	202031011165	<i>WOMEN SAFETY DEVICE USING ESP32CAM</i>	Patent application filed	Dr. Sandip Mandal
77	24.07.2021	202141033317	<i>SENSOR BASED INTELLIGENT HAND GLOVES FOR HEALTHCARE PROFESSIONALS FOR USE DURING COVID-19 PANDEMIC</i>	Patent application filed	Anirban Das
78	08-01-2021	202141034599	<i>SKIN CANCER (MELANOMA) DETECTION AND RECOMMENDER SYSTEM USING DEEP LEARNING</i>	Published	Anirban Das
79	08-04-2021	202141035168	<i>INTELLIGENT INDOOR NAVIGATION AND POSITIONING SYSTEM USING AUGMENTED REALITY (AR)</i>	Published	Anirban Das
80	23-08-2021	12021106658	<i>A METHOD TO REFINE FEATURE VECTORS FOR COMBINING MULTIPLE NEURAL NETWORKS</i>	AUSTRA LIAN PATENT GRANTE D	Anirban Das
81	08-12-2021	202141036605	<i>SENSOR BASED INTELLIGNET BRAIN COMPUTER INTERFACE SYSTEM TO ASSIST HAND PARALYZED PATIENTS TO PERFORM TYPING BY BRAIN</i>	Published	Anirban Das

82	11-03-2021	2021105871	<i>MUTLIMODE IMAGE FUSION TECHNIQUE FOR AUTOATED CORRELATION IDENTIFICTION IN MEDICAL IMAGES</i>	AUSTRA LIAN PATENT GRANTE D	Anirban Das
83	17-11-2021	2021106658	<i>A METHOD TO REFINE FEATURE VECTORS FOR COMBINING MULTIPLE NEURAL NETWORKS</i>	AUSTRA LIAN PATENT GRANTE D	Anirban Das

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Summary
Patent Details

Departments	Filed/Published/granted patents (August 2021 to December 2021)	July 2020 to December 2021 (Cumulative)
CSE	0	4
BioTech	0	4
CA	6	64
BSH	0	4
ECE	0	7
TOTAL	6	83

**Testing
&
Consultancies
(August 2021 to December 2021)**

Consultancy

Sl. No.	Department	Company Name	Materials Received as on	Tests Completed as on	Order Amount(In Rs./-)
1	Civil Engg	C. E. Testing Company Pvt. Ltd.	26th October, 2021	2nd November, 2021	44,132.00

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Summary:

Consultancy (August 2021 to December 2021)	July 2020 to December 2021 (Cumulative)
1	5