

RAJENDRA MISHRA SCHOOL OF ENGINEERING ENTREPRENEURSHIP
INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

Insight '16

RESEARCH SCHOLARS' DAY

FEBRUARY 15, 2016



Insight '14



Insight '15



Insight '16

RESEARCH SCHOLARS' DAY

“Science progresses best when observations force us
to alter our preconceptions.”

— Vera Rubin

Rajendra Mishra School Of Engineering Entrepreneurship
Indian Institute of Technology Kharagpur, India—721302



Rajendra Mishra School of Engineering Entrepreneurship (RMSoEE) was established at Indian Institute of Technology Kharagpur in the year 2010. The school aims to encourage the entrepreneurial minds and imparts strong entrepreneurial culture and ecosystem for venture creation and early start-ups. It is a revolutionary step forward by integrating the academic and practice aspects of entrepreneurship education. The school offers a 5 year integrated dual degree with M.Tech in Engineering Entrepreneurship and B.Tech in engineering discipline. The students selected through JEE for B.Tech or dual degree M.Tech in any engineering department can opt for this program from their second year of study according to department change over rules. This unique school for the first time provides the opportunity for engineering undergraduate students to design product while pursuing their academic degree during entire period of study (5 years) for dual degree. Students who major in entrepreneurship are exposed to new venture creation through which they gain understanding of process pertaining to skills, knowledge and experience required to become successful entrepreneur. The school offers unique curriculum which has been designed to give students an opportunity to develop their own creative skills thereby applying principles of engineering management, marketing and finance to the challenges of starting new business, growing and managing business towards scalability. The school is equipped with innovation lab for ideation and innovative thinking from second year onward. The students work on their innovative idea to convert it into product. The various funding structure available in the entrepreneurial ecosystem at IIT Kharagpur provides flexibility to students for building and testing their prototypes. The students are individually mentored by faculties and successful entrepreneurs in their endeavor. Spearheaded by number of fellows and doctorates from leading institutes and universities amongst its faculty, the school also runs a vibrant Doctoral/ MS Program aimed to bridge intellectual gaps in relevant interdisciplinary studies related to innovation and entrepreneurship literature. It enriches the value of knowledge, technology intervention and transfer, and overall ecosystem development for innovation and entrepreneurship.

From Director's Desk



भारतीय प्रौद्योगिकी संस्थान खड़गपुर
खड़गपुर-७२१ ३०२
Indian Institute of Technology Kharagpur
Kharagpur – 721302

प्रोफेसर पार्थ पी. चक्रवर्ती, एफएनए, एफएएससी, एफएनई
निदेशक

Prof. Partha P. Chakrabarti, FNA, FASc, FNAE
J. C. Bose Fellow
Director
Professor, Department of Computer Science & Engineering



10 February 2016

MESSAGE

I am glad to know that Rajendra Mishra School of Engineering Entrepreneurship, IIT Kharagpur is celebrating its Research Scholars' Day on 15th February, 2016. The school has contributed in instilling entrepreneurial mindset into engineering students through project-based learning and promoting innovative thinking. India needs entrepreneurs to drive its economy and create employment opportunities. Our students are encouraged to leverage their technological know-how in creating new ventures that can alleviate some of the challenges faced by common people. I advise the students and faculty members to focus their energy and efforts on India-centric approach to problem solving.

I believe research scholars can play a crucial role by discovering new knowledge that can support entrepreneurs in new business creation. This event would provide an opportunity for engaging discussions on research frontiers in the area of entrepreneurship.

I congratulate the faculty members and research scholars of the School for organizing the event and wish them a great success.

(P.P. Chakrabarti)

From Patron's Heart



Devendra Mishra

Adjunct Professor, Decision Sciences & Marketing,
Graziadio School of Business & Management, California
Founder of Media & Entertainment Alliance (MESA),
Hollywood IT Society (HITS) and
Biotech Supply Chain Management Alliance (BSMA)

MESSAGE

February 10, 2016

LEVERAGE THE HIDDEN ASSETS OF THE GURUKUL!

Celebrating the **Research Scholars' Day 2016** is a major milestone in your career as you prepare to bring about innovation and entrepreneurship to produce abundance for the millions of people in India who will have greater access to clean water, food, energy, health care, education, and everything else that is necessary for empowered living. In this pursuit, you are fulfilling the dreams and aspirations of Professor Rajendra Mishra, a pioneer of engineering and management education for three decades from the 50s.

I believe the Gurukul environment of RMSoEE fosters an early intellectual curiosity and preparedness for entrepreneurship where creative problem solving techniques are utilized to dramatically increase the number and innovativeness of the commercial opportunities identified. Further, it performs these important functions in a rather serendipitous and idiosyncratic way. It is not surprising that Google, the greatest research knowledge-driven company in the world, has structured itself and operates like a university in all aspects of the business.

You are discovering your core competence in the Gurukul where our knowledge economy, coupled with the unshackling of indigenous enterprise, will be a fertile ground for Entrepreneurship. I bring your attention to Dr. C. K. Prahalad's insistence to find "Fortune at the Bottom of the Pyramid" which is an unserved and under-served mass market of nearly four billion people in the world. Your research scholarship, combined with the education imparted by your teachers and mentors in an incubation lab and technology park, will yield personal satisfaction, empowerment and growth. Make it your Destiny!

From Dean's Desk



भारतीय प्रौद्योगिकी संस्थान खड़गपुर
खड़गपुर- 721 302, भारत

Indian Institute of Technology Kharagpur
Kharagpur - 721 302, India

Prof. Samit K. Ray

Dean of Postgraduate Studies and Research
Professor, Department of Physics

February 9, 2016

Message

I am very happy to note that Rajendra Mishra School of Engineering Entrepreneurship, IIT Kharagpur is organizing its third Research Scholars' Day on February 15, 2016 with great enthusiasm.

I am sure this occasion will provide a unique platform for mutual sharing of knowledge, expertise and experience amongst the research scholars and the faculty. I believe that such deliberations will help the research scholars to enrich their research potentials and will motivate them to take their research works to greater heights.

I convey my greetings to faculty and research scholars and wish the event a grand success.

Samit Kumar Ray

A Step Forward



Prof. Satyahari Dey
Professor, Department of Biotechnology
PI-TIETS, IIT Kharagpur
Managing Director, STEP

MESSAGE

I am very happy to know that Rajendra Mishra School of Engineering Entrepreneurship, IIT Kharagpur is celebrating 4th Research Scholars' Day on 15th February, 2016. This year is special for India and for RMsEE as well, as our country has JUST started the STARTUP REVOLUTION as a flagship initiative of Government of India flagged off by our Prime Minister.

RMsEE run programs are very unique as it is housed in the most reputed IIT and all students have core expertise in one branch of engineering, with unhindered access to mentors of global reputation.

The Research Scholars should work with enthusiasm to evolve R&D programs for Invention, Innovation and Translation that will add further significance to the big name of IIT Kharagpur .

My very best wishes for the endeavor.

From Head's Desk



Time for update again as we prepare to observe our third Research Scholars' Day. Several developments took place in the past one year and here are the highlights:

- Mr. Partha Mukhopadhyay of 2011 batch has become the first research scholar from the School to complete his doctoral dissertation in 2015 and has joined a research group in US.
- Ms. Jagruti Thakur, research scholar, has been awarded the BASE 2016 Internship Program supported by the DST, Govt. of India, and IUSSTF. She will be working at Lawrence Berkeley National Lab, Berkeley for a period of 5 months.
- Dr. Basab Chakraborty, assistant professor, received the top teaching feedback in a class of over 100 students during Autumn 2014-15 academic session for 'Product Development'.
- Dr. Bhowmick, assistant professor, spearheaded the EOI to make IIT Kharagpur the Knowledge Management partner Institution of Consultancy Development Centre, a DST outfit in Government of India.
- GES was hugely successful again. *Kharagpur Product Innovation Network* (KPIN) – a network to connect innovators with the proper co-founders and *Kharagpur Angel Network* (KAN) – an initiative connecting the alumni, angel investors and VC's to the IIT Kharagpur Start-up Community were also launched during GES. Several EADs were also held.
- Our entrepreneurs continue to win laurels –
 - * *Auro Robotics* became a part of Summer 2015 batch of Y Combinator, relocated to Silicon Valley, and are currently doing pilots in Santa Clara University in Bay Area.
 - * *EcoZen Solutions* has diversified to Solar Irrigation in addition to Micro Clod Storage.
 - * *Capillary Technologies* has acquired MartJack and raised \$45 Million Investment Round led by Warburg Pincus.
 - * *Intugine* has launched two hands-free control sensors – *Nimble* and *Airpen*.
 - * Instant messaging-based delivery start-up *MagicTiger* has acquired *Instano*, a B2C e-Commerce App that renders on-demand delivery of services over chat.
- The School has started a *Post-Graduate Diploma in Business Analytics* with four other departments of IIT and IIM, Calcutta and ISI.
- The extension of STEP building has been completed. This will house the Office of Head, Office of the School, two Laboratories, and two faculty rooms. In addition, the School is setting up a Seminar Room in the iLab.
- The *Energy Laboratory* and *Product Analytics and Modelling Laboratory* have been setup.
- The plans for the proposed *iTower* has been completed and construction is about to start.
- The construction of the maiden tower for the *Science and Research Park at Rajarhat*, has been progressing in full speed. It is expected to be completed by middle of 2017 and become a hub of entrepreneurial activities of the East.
- Juggernaut moves on ...

With over 30 research scholar and over 7 active areas of research, our third Research Scholars' Day is expected to be a vibrant and lively affair. The enthusiasm is palpable with the scholars providing leadership in academic activities of the day with the faculty following up. Over 20 scholars have volunteered to showcase their research and the faculty has taken the challenge to face the questions from scholars in an open forum. Our patron, Prof. Devendra Mishra, Chief Strategist, MESA and Executive Director, HITS has kindly consented to grace the occasion and help the School in forging the vision forward. Prof. Ranjan Sen, General Manager at Kapgari Inc. and Working President of Seva Bharati will also share his experiences in social entrepreneurship. Look forward to exciting times.

जय हिन्द !



From the Research Coordinator's Desk

As the Research Scholars Coordinator of Rajendra Mishra School of Engineering Entrepreneurship (RMSoEE), it's my responsibility to appraise you about the progress of the School on this third Research Scholars Day - Insight'16.

The School was started in IIT Kharagpur to inculcate entrepreneurship among engineering students and to promote entrepreneurship-oriented interdisciplinary research. The School aims to create change agents of the future by imbibing entrepreneurial spirit in the students. The school is actively pursuing its goal with the help of a diverse pool of faculty members from within and outside the school at IIT Kharagpur. We have also made some progress in establishing academic collaborations with international universities such as Taipei Medical University, Taiwan and Aalto University, Finland.

From its humble beginning in 2010, the school has 30 research scholars working in several important research areas such as product modelling, product design and fabrication, data analytics, healthcare management, energy systems, entrepreneurial leadership, entrepreneurial finance, and social entrepreneurship etc. Our dual-degree students and research scholars have already started creating their footprints in the international arena. The research scholars have planned to showcase their research work in the form of a poster session. They are excited to discuss their progress with the faculty and peers for gathering feedback. I'm sure such interactions would help them refine their thought process and impart necessary momentum to their research progress. Such initiatives would also promote research awareness among new research scholars.

I congratulate the entire team of Research Scholars for their dedicated efforts in bringing the laurels to the school and making this event a success.



GURU

Partha Pratim Das

Basab Chakraborty

Bhaskar Bhowmick

Manoj Kumar Mondal

Prabha Bhola

Pranab Kumar Dan

Ram Babu Roy

Titas Bhattacharjee



Partha Pratim Das
Professor, Head

Brief Profile

- Taught at the Department of Computer Science and Engineering, IIT Kharagpur from 1988-98.
- Worked as Business Development Manager, Alumnus Software Ltd (1998-2001) and as Senior Director, Interra Systems, Inc. (2001-11).
- Joined the Department of Computer Science and Engineering, IIT Kharagpur as Professor in 2011.
- Served as a Visiting Professor with Institute of Radio Physics & Electronics, Calcutta University (2003-2012)
- Published widely in areas of Digital Geometry, Image Processing, Parallel Computing and Knowledge-based Systems
- Served International Conference on VLSI Design & Embedded Systems, as General Co-Chair in 2005 and Program Co-Chair in 2016. Also served as Organizing Chair for International Symposium on VLSI Design & Test, 2007
- Joint Principal Investigator of National Digital Library project of MHRD.
- A core team member for the upcoming Technology Park of IIT Kharagpur at Rajarhat, Kolkata.
- Member of IEEE, ACM, IUIAPR and VLSI Society of India and works as a Review Writer for ACM Computing Surveys and is a reviewer for Pattern Recognition Letters.

Accolades

- UNESCO/ROSTSCA Young Scientist Award (1989), INSA Young Scientist Award (1990), Young Associate-ship of Indian Academy of Sciences (1992), UGC Young Teachers' Career Award (1993), INAE Young Engineer Award (1996), Interra 5 Years' Tenure Plaque (2007), Interra Special (Process) Recognition (2009).

Research Interests

Entrepreneurship Promotion, Image Processing, Software Engineering, Technology-Enabled Education, and Digital Heritage

Basab Chakraborty
Assistant Professor



Brief Profile

- He joined the institute in January 2013
- Prior to that, he was involved in the development of new cost effective and energy efficient chemical process for the manufacturing of lead acid batteries for fourteen years
- Was instrumental in forming the Research centre and spearheaded basic research on the frontiers of electrochemistry and material science to evolve cost effective new materials suitable for the improvement of the bottom line
- Transformation of the research outputs into commercial products was the major achievement
- Presently working on Integration of Renewable sources of Energy in Smart Energy distribution network
- Currently working under a Sponsored Project on Promoting Innovations in Individuals, Start-ups and MSMEs (PRISM)
- Support to TEPP Outreach cum Cluster Innovation Centre (TOCIC) At Indian Institute Of Technology, Kharagpur Under Promoting Innovations In Individuals, Start-Ups.

Research Interests

Product Design and Development, E-waste estimation and management, Energy Science & Management, Development of New Material for Energy Research



Bhaskar Bhowmick
Assistant Professor

Brief Profile

- Reviewer of Strategic Entrepreneurship Journal.
- Member, Editor Advisory Board on Competitive Strategies for Academic Entrepreneurship: Commercialization of Research-Based Products.
- Has worked for 13 years in the industry for product development, marketing, and managing businesses.
- Has experience of entrepreneurship in launching small units within the multinational company folders.
- Has initiated launching personal care product division of Parle Products limited.
- Initiated establishing the business of synthetic threads of Lohia Group.
- Launched the consumer division of United Phosphorous limited in eastern India.
- Has published Book Chapters, Cases, and Research Papers in National and International journals and conferences.
- Currently working on a Sponsored Project on “Technology Incubation and Development of Entrepreneurs” (TIDE)

Research Interests

Innovation ecosystem, Innovation in firm environment relations, Dynamic capabilities of firms, Leadership and Succession strategy

Manoj Kumar Mondal **Visiting Faculty**



Brief Profile

- Received Gold Medal (2008) from Lockheed Martin through competition organized in association with University of Texas at Austin, Stanford University, FICCI, DST
- Member of the team receiving Gold Plaque and Cash award (2014) from the Ministry of Chemicals & Fertilizers for the best innovation that evolved out of a sponsored project executed at Materials Science Center, IIT Kharagpur
- Recently consulting projects from Frost & Sullivan on study of techno-economic feasibility and financial viability of new in-novations evolved out of research projects sponsored by the National Jute Board, Ministry of Textiles, Government of India.
- Received financial award from the Department of Scientific and Industrial Research (DSIR) under the TechnoPreneur Pro-motion Program (TePP) for refinement of a technology (2009).
- Received financial award from the Technology Information, Forecasting and Assessment Council (TIFAC) under the program of Technology Refinement and Marketing Programme (TREMAPP) (2011)
- Mentored several spinoff startups out of IIT Kharagpur, some of which are making global footprint and has been closely as-sociated with (www.nucleodyne.com) for the last decade.

Research Interests

Financial Economics, Banking, Product Development, Bio-Energy, Entrepreneurship.



Prabha Bhola
Assistant Professor

Brief Profile

- Priorly served as Assistant Professor in Indian School of Mines, Dhanbad
- Also served as a Guest Lecturer in Hyderabad Central University and Visiting Faculty in Narsee Monjee Institute of Management Studies, Hyderabad
- Her area of specialization is Economics with current research interests in the field of Entrepreneurship
- Has published a book, entitled 'Rural Poverty and its Determining Factors: An Empirical Analysis of Districts in Uttar Pradesh, India' by LAP AG & Co. KG, 2010
- Conducted training programmes such as faculty development and technology based entrepreneurship development programmes.
- For a brief tenure she also worked as OSD at STEP, IIT Kharagpur.
- She was entrusted with managing the technology and innovation related projects and working along with its network partners.
- Has strong analytical and quantitative aptitude with high exposure to application of statistical techniques and usage of statistical packages like STATA, SPSS, AMOS.

Research Interests

Venture creation, Quality Management and Performance Measurement, Business Analytics, SMEs Growth and Quality Management, Service management, Statistical Modelling, Impact assessment and Performance Measurement of Entrepreneurial Firms, Entrepreneurship & Poverty, Sustainable Development

Pranab Kumar Dan
Associate Professor



Brief Profile

- Member - Organising committee of AIMTDR International Conference.
- Chaired technical sessions in seminar and workshop organised by the Production Engineering Department, Jadavpur University, and Confederation of Indian Industries (ER).
- Member of the Manufacturing, Technology and Innovation Committee.
- Fellow of The Association of Engineers, India.
- Senior Member of the Indian Institution of Industrial Engineering.
- Chairman, Entrepreneurship Cell at IIT Kharagpur.
- Member of Education & Skills Development committee of CII, Eastern Region
- Member on the Expert Committee on Education, Training and HR Initiatives of Indian Chamber of Commerce

Research Interests

Product Development and Manufacturing.



Ram Babu Roy
Assistant Professor

Brief Profile

- He is a Fellow of Indian Institute of Management Calcutta (IIMC), India
- His areas of specialization are Management Information Systems and Operations Management
- Masters of Technology in VLSI Design Tools and Technology from Indian Institute of Technology Delhi (IIT-D), India.
- Master of Science in Physics from Indian Institute of Technology Kanpur, India
- Has served as a scientist in Aeronautical Development Establishment, Defence Research and Development Organization, Bangalore and was involved in the applied research towards the design and development of Micro Air Vehicles (MAV) and Radar Absorbing Materials (RAM)
- Delivers lectures in Executive MBA and Faculty Development Programmes.
- Associate Member of the Institution of Electronics and Telecommunication Engineers (IETE).
- Reviewer of European Journal of Operations Research.
- Reviewer of International Conference on Information Systems & European Conference on Information Systems.

Research Interests

Big Data and Business Analytics, Healthcare Operations Management, Complex Networks, Healthcare Analytics.

Titas Bhattacharjee (Rudra)
Assistant Professor



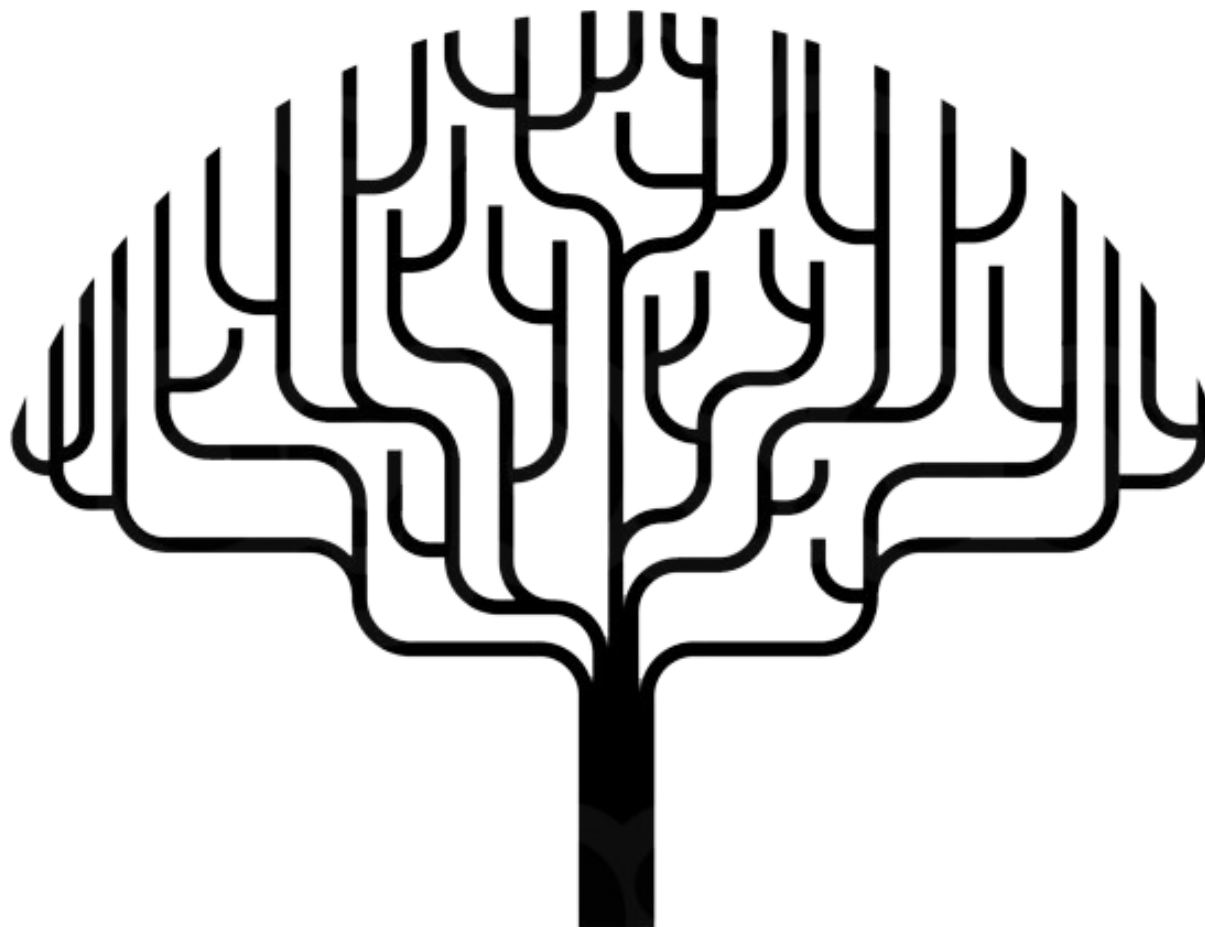
Brief Profile

- Active Member of Faculty Development programmes conducted by IIT Kharagpur.
- Professional trainer in accounting and related areas for taking Guest Lectures in Government organisations and private business schools.
- Has been awarded the Fellowship in Finance & Control area from Indian Institute of Management, Calcutta (IIMC) in 2012.
- Currently working on a sponsored project “Support of Entrepreneurial and Management Development of SMES through incubators (SEI).

Research Interests

Corporate Governance, Corporate Financial Reporting, Entrepreneurial Finance, Corporate Social Responsibility.

SEERS



- ♦ Sharad Kumar
- ♦ Susmita Ghosh
- ♦ Amrita
- ♦ Pradipta Chandra
- ♦ Rana Basu
- ♦ Sreekanth V K.
- ♦ Arpita Das
- ♦ Sonal Singh
- ♦ Mohd. Zuhair
- ♦ Jagruti Thakur
- ♦ Partha Mukhopadhyay
- ♦ Priyanka Laha
- ♦ Bipul Saha
- ♦ Sayani Mondal
- ♦ Jignesh Sindha

- ♦ Piyush Kumar Dongre
- ♦ Manali Chatterjee
- ♦ Aashish Kumar
- ♦ Bishnu Pada Bose
- ♦ Sireesha Tamada
- ♦ Manish Chandra
- ♦ Sanyka Banerjee
- ♦ Himadri B G S Bhuyan
- ♦ Saurabh Singh Thakur
- ♦ Sourabh Mandol
- ♦ Debraj Bhattacharjee
- ♦ Jayshree Patnaik
- ♦ Abhijit Debnath
- ♦ Manojit Ray
- ♦ Shibabroto Banerjee

Sharad Kumar

Area of Research: Planning Interventions for Cardiovascular Disease
Prevention in India: A Simulation Approach

Supervisor: Prof. Ram Babu Roy

Contact: sharadmanit@gmail.com



About

Sharad Kumar has completed his Master of Technology in 2009 from Maulana Azad National Institute of Technology-Bhopal and B.E. in Computer Science and Engineering in 2006 from Sri Satya Sai Institute of Science and Technology-Sehore affiliated to Rajiv Gandhi Proudyogiki Vishwavidyalaya-Bhopal, Madhya Pradesh. He worked as a Senior Research Fellow in project entitled “TBI” at IIT Kharagpur. His research interest lies in systems modeling and networks for healthcare systems.

Research Abstract

Cardiovascular diseases (CVDs) are the largest cause of death and disability in India. The global burden of disease study estimated two fold premature CVD deaths in India as compared to developed countries. The burden of CVD is increasing and moving towards younger age group. A large proportion of younger deaths lead to adverse impact on nations' productivity. Growing burden of CVDs has been mostly attributed to behavioural and metabolic risk factors. Prevalence of risk factors are increasing and it has been directly associated with the severity of CVD in population. Lifestyle and behaviour plays important roles in increasing the CVD incidences where dynamics over time are vital. Majority of CVDs can be averted through practicing healthy lifestyle. Presently, there has been limited information available on the lifestyle interventions and their impact on population health in India.

This research aims to provide a framework for exploring various preventive strategies for CVD management in India. A system dynamics (SD) modelling approach have been used to determine best public policy on preventive care intervention under resource constraint environment. Using simulations experiment, different policies can be evaluated by using the 'what if' analysis, with the aim to evaluate the relative effectiveness of public policies on preventive care interventions. It can provide insights into implications of various decisions and helps us in identifying the best one for improving the existing system. This research work would help policy makers in effective and efficient decision making on preventive care for CVDs. The proposed framework can be extended for other communicable and non-communicable diseases with appropriate modifications.

Publications

- Sharad Kumar and Ram Babu Roy. “Modeling the Impact of Increasing Tobacco Taxes on Public Health in India”, 2nd International conference on Contemporary Debates in Public Policy and Management 2016, India.



Susmita Ghosh

Area of Research: Recognition and Response to Perceived Environmental Uncertainties in start-ups

Supervisor: Prof. Bhaskar Bhowmick

Contact: susmita.gh@see.iitkgp.ernet.in

About

Susmita completed her Master of Science (by Research) in RF and Microwave from Dept. of Electrical and Electronics Communication Engineering, IIT Kharagpur in 2009 and B.Tech in Electronics & Telecommunication Engineering from BPUT in 2004. She worked as lecturer in engineering colleges under WBUT and BPUT from August 2008 to October 2010. Her current research interests are Entrepreneurial Business Incubation, Factors of uncertainty affecting Product Development.

Research Abstract

Uncertainty is the most certain thing to happen for any firm and this becomes more obvious in case of start-ups due to resource crunch. Therefore, there are many factors that contribute towards uncertainty. In a situation, when a firm faces uncertainty, they respond back through strategic entrepreneurial orientations for achieving performance. So, this research focuses on these aspects and studies the interrelationship of uncertainty, entrepreneurial orientation and performance. The context of study is Indian start-ups.

Publications

- Susmita Ghosh and Bhaskar Bhowmick. (2015). Mind Your Product-Market Strategy on Selecting Marketing Inputs: An Uncertainty Approach in Indian Context, International Journal of Social, Behavioural, Educational, Economic and management Engineering, 9(5), 1701-1707.
- Susmita Ghosh and Bhaskar Bhowmick. (2014). Perceived Environmental Uncertainty for Start-ups: A Note on Entrepreneurship Research in Indian Perspective, Technology Innovation and Management Review, 4(8), 27-35
- Susmita Ghosh and Bhaskar Bhowmick. (2014). Developing and Evaluating a New Scale for Product Positioning Uncertainty in India, International Journal of Scientific and Engineering Research, 5(1), 552-559
- Susmita Ghosh and Bhaskar Bhowmick. (2014). Uncertainties in Entrepreneurship Climate: A Study on Start-ups in India, Procedia - Social and Behavioral Sciences, Elsevier, 150, 46 – 55
- Susmita Ghosh and Bhaskar Bhowmick. (2014). Technological Uncertainty : Exploring Factors in Indian Start-ups, IEEE Global Humanitarian Technology Conference, October 10-13, California, USA,
- Susmita Ghosh and Bhaskar Bhowmick. (2014). Smart Healthcare Delivery System: An Innovation in Rural West Bengal, Exploria, Conference. ISSN 0976-8262
- Susmita Ghosh and Bhaskar Bhowmick. (2014). Developing New Market Uncertainty Scale for Indian start-ups, Second International Conference on Business Analytics and Intelligence, December 18-20, IISc, Bangalore.

Amrita

Area of Research: Knowledge Management for improving Maternal Healthcare

Supervisor: Prof. Ram Babu Roy

Contact: iamthealchemist@gmail.com



About

Amrita has completed her M.S. (by research), and PGDBA from IIT Kharagpur. She has done B.E. in Computer Science from Visvesvaraya Technological University, Karnataka. She has worked as a Senior Project Officer for Incubation and Entrepreneurship Programmes, SRIC, IIT Kharagpur for more than six years. Before this she worked as a lecturer for three years and as junior programmer for two years in the field of Information technology and computer science.

Research Abstract

Maternal health is a vital indicator of a nation's health. The Millennium Development Goal 5 had set its one of the eight goals in 1990 to reduce maternal deaths by three quarters, by 2015. India contributed 50,000 maternal deaths out of 289,000 in 2013. However, most of the deaths are preventable provided the women and her close associates have knowledge about nutrition, danger signs and facility available for maternity care. India has a large rural and semi-urban population where pregnant women lack access to resources and quality healthcare. Moreover, there is very low facility utilization, which is important for reducing the maternal deaths. Although it has been seen that the service utilization depends on a number of complex factors, knowledge management (KM) of various aspects related to maternal health might lead to increased service utilization. This research aims to identify gap in the maternal health related knowledge among Indian women and design a framework for improving their knowledge level.

Publications

- Amrita, Banerjee I., Roy R.B. "Redesigning knowledge flow network for maternity care", 9th ISDSI International Conference 2nd -4th January 2016, Goa, India
- Amrita; Roy, R.B., "Integrating knowledge, attitude and practice in decision model for maternity care in emerging economy," in Global Humanitarian Technology Conference (GHTC), 2015 IEEE, pp.71-78, 8-11 Oct., Seattle, Washington USA, 2015, doi: 10.1109/GHTC.2015.7343957
- Amrita, Roy R.B. "Knowledge management system for improving Indian healthcare: a research proposal", 2nd International conference on business analytics and intelligence (ICBAI), 18th - 20th Dec, IISC Bangalore, India.



Pradipta Chandra

Area of Research: Capacity Development of Indian Farmers through Technology Transfer: Exploring Challenges and Redesigning Options.

Supervisor: Prof. Titas Bhattacharjee

Contact: pradipta.chandra@gmail.com

About

Pradipta Chandra has joined the Ph.D programme in Rajendra Mishra School of Engineering Entrepreneurship (RMSoEE) in the year 2012. He has awarded MS from Materials Science Centre, IIT Kharagpur and got eight years industrial experience on processing of polymers and plastics leading to the products in electronics, agriculture, medical etc. Mr. Chandra was associated with the various innovation projects sponsored by Govt. of India. His present research work is based on agriculture technology transfer and adoption issues in India.

Research Abstract

India is a country where ~70% people are rural dwelling; literally, the Rural India is serving food to the modern India relentlessly. But the livelihood of small and marginal farmers is pathetic; the cost of cultivation is certain whereas return is uncertain. They are the victims of reckless use of fertilizers, pesticides and so on leading to unknown and untreatable diseases. Farmers are unable to get the benefits of value addition through post-harvest technology. The situation is alarming. Literature reveals that there are many barriers behind the non-adoption of technology. The objective of the research is to find out the variables of Technology Adoption Lag and to identify the underlying factors from empirical data analysis to help the capacity development of farmers. In the Indian scenario Krishi Vigyan Kendra (KVK) is the bottom level extension institution working towards farmers' capacity building through technology transfer training. Rapid proliferation of KVKs indicates its importance from both the corners of government and farmer. From Exploratory Factor Analysis (EFA) technique my study revealed three significant factors, i.e., failure of TTT (technology transfer training) (i) comprehension, (ii) customization and (iii) generalization, which are responsible for Technology Adoption Lag.

Publications

- Pradipta Chandra, Titas Bhattacharjee and Bhaskar Bhowmick, "Role of Non-formal Educational Leadership in Technology Transfer for Agrarian Community in the Economically Challenged Area in Jungalmahal", National Seminar on Educational Leadership, Centre for Educational Technology (CET), IIT Kharagpur; June 01-03, 2015.
- Pradipta Chandra, Titas Bhattacharjee and Bhaskar Bhowmick (2015), "Do Knowledge Deficiency Factors Steer Agricultural Extension? Institutional Evidence from Red Lateritic Zone in India", International Journal of Tropical Agriculture (IJTA), Vol. 33, No. 4 (December).
- Pradipta Chandra, Titas Bhattacharjee and Bhaskar Bhowmick, "Does technology transfer training really a concern for agriculture output in India? A critical study on dry lateritic zone in West Bengal", International Conference on Agribusiness in Emerging Economies (ICAEEF), Institute of Rural Management Anand (IRMA), Gujarat, India; January 06-07, 2016.
- Pradipta Chandra, Titas Bhattacharjee and Bhaskar Bhowmick, "Is It Crucial to Upgrade the Extension System for Capacity Development of Farmers? Learning from Dry-Lateritic Zone in India", International Extension Education Conference on Education, Research and Services (IEEC-BHU 2016), Department of Extension Education Institute of Agricultural Sciences, Banaras Hindu University, Varanasi, India, January 27-30, 2016.

Rana Basu

Area of Research: Quality Management for IT Enabled Service SMEs

Supervisor: Prof. Prabha Bhola

Contact: rbasu004@gmail.com



About

Rana has received M.Tech in Industrial Engineering & Management and B.Tech in Computer Science & Engineering from West Bengal University of Technology. He worked as Process Associate in Software Service Firm at Kolkata. His research interests are quality management, statistical modeling and green supply chain.

Research Abstract

In India, small & medium enterprises (SMEs) play vital role towards the overall growth and development of emerging country. Present scenario shows that India's economic growth is driven by service sector particularly due to expansion of information technology (IT) and ITES and also IT sector itself contributes more than 20% of the overall service sector GDP rising at a steady rate. Considering the growing prominence of IT enabled digital SMEs and its contribution towards economic growth, India has targeted these organizations as highest priority area. Considering the dynamics of business milieu, organizations cannot disregard the deliberate concerns of quality for its competitive positions. Thus managing quality has become an imperative for digital enterprises in service sector to gain competitive advantage and to achieve long term business success. Therefore, the research aims to explore and identify contextual quality management (QM) practices by deploying multi stage qualitative and quantitative methodological approach in context to IT enabled service SMEs. This study would further develop a concurrent framework to empirically investigate critical linkages of QM practices and its direct and indirect effect on performance.

Publications

- Basu, R. and Bhola, P. (2015) "Exploring quality management and its pattern analysis in Indian service SMEs", Journal of Enterprising Culture, Vol 23 (2), pp 199-235
- Basu, R. and Bhola, P. (2014) "A framework to identify service quality determinants of IT enabled scalable ventures: A study from Indian context", Journal of Information & Knowledge Management, Vol 13 (4), pp 1-14
- Basu, R. and Bhola, P. "Integrating fuzzy MCDM methodology to investigate quality management practices in Indian digital service SMEs", International Journal of Services and Operations Management.



Sreekanth V K

Area of Research: Decision Modelling in Healthcare Value Chain

Supervisor: Prof. Ram Babu Roy

Contact: sreekanthvettikkadu@iitkgp.ac.in

About

Sreekanth completed his M.Tech in Systems Analysis and Computer Applications from National Institute of Technology Karnataka, Surathkal and B.Tech in Electrical and Electronics Engineering from Mahatma Gandhi University, Kottayam. He has been working with M/s. Infosys Limited, India for about five years. He joined the department in 2012 as a Research Scholar. His tryst with knowing the world drives his career.

Research Abstract

Emergency Medical Services (EMS) are responsible for providing out-of-hospital care to emergency patients and transporting the emergency patients to the definitive care at hospitals within the specified time. Although most of the EMS projects in India have been supported by state wings of National Health Mission (NHM), India does not have a centralized body which provides guidelines for training and operation of Emergency Medical Services (EMS). There are various service projects such as Dial 108/102/1298 ambulances, Centralized Accident and Trauma Service (CATS), and private ambulance models exist with wide variability in their dispatch and transport capabilities. Most of the projects modeled behind the understanding from the countries where EMS is in matured stage, which may not serve the needs of India. The objective of the research is to design a service machine for providing effective and efficient in Indian context using agent based modeling and simulation. The agent based modeling perspective helps us in analysing the system at micro level and at the same time it allows to develop understanding of emergent behaviour of the system.

Publications

- Sreekanth V K, Ram Babu Roy, “Modeling Demand Patterns of Emergency Medical Services in Rajasthan”, International Conference on Systems in Medicine and Biology (ICSMB) 2016, January 04-07, 2016 at Indian Institute of Technology Kharagpur, India.
- Sreekanth V K, Ram Babu Roy, “Predicting Emergency Medical Service Demand Using Time Series Modeling”, 9th Indian Subcontinent Decision Science Institute (ISDSI) International Conference, January 02-04, 2016 at Goa, India.
- Sreekanth V K, Ram Babu Roy, “Equity-Constrained Dispatching Models for Emergency Medical Services”, The Society for the Study of Artificial Intelligence and Simulation of Behaviour (AISB) Workshop on 'Agent-Based Models of Bounded Rationality' May 07-08, 2015 at the University of Southern Denmark, Slagelse, Denmark.
- Sreekanth V K , Ram Babu Roy, “Modelling Accident Blackspots in Rajasthan for Designing Ambulatory Care Network”, 2nd International Conference on Business Analytics and Intelligence (ICBAI), December 18-20, 2014 at IISc Bangalore, India

Arpita Das

Area of Research: Electronic Waste Management

Supervisor: Prof. Basab Chakraborty and Prof. Partha Pratim Das

Contact: mail4arpitadas@gmail.com



About

Arpita completed her M.Tech in 2012 and B.Tech in 2010 in Applied Electronics & Instrumentation Engineering from West Bengal University of Technology. She joined the department in 2012.

Research Abstract

The continuous expansion of electronic industries and changing life style have given rise to a new waste stream – “Electronics Waste” or “e-waste” which is physically and chemically different from conventional municipal waste. The growing volume and complex composition of these items along with the absence of proper disposal mechanisms is a major concern today. But, in most of the countries the existing e-waste management practices are very spooky and policies are not implemented appropriately. In case of developing countries like India, in addition with internal waste generation, improper dumping of e-waste adds another burden in the waste treatment. Therefore, the present study aims to develop an e-waste management framework at organization level in India considering IIT Kharagpur as a model. This research would also investigate the current e-waste status and management strategy and will predict the future e-waste projection to evolve appropriate policies, schemes & directions for e-waste management.

Publications

- Das, A., Chakraborty, B., and Das, P. P. “Qualitative and Semi Quantitative Estimation of Major Elements in Desktop Computer Motherboards.” National Conference on E-waste Management, XLRI, Jamshedpur, India, 13-14 January 2016.



Sonal Singh

Area of Research: Grassroots Innovation for Entrepreneurship
Development

Supervisor: Prof. Bhaskar Bhowmick

Contact: sona.singh610@gmail.com

About

Sonal completed B.Tech in Dairy Technology and M.B.A in Agribusiness Management from Anand Agriculture University. She has worked at IDMC Limited (Subsidiary company of NDDB) for one 1.5 years. She joined the department in 2012.

Research Abstract

Innovation is recognized as one of the most important aspect for economic development of the developed as well as developing countries. The traditional approach of grassroots innovation is top-down one, in which the population at the BoP (Base of the Pyramid) could represent for business in the form of new potential consumers. However, these grassroots people can be a potential source of new ideas, knowledge and innovation. In this regard, grassroots innovation has been emerged as bottom-up approach to solve the problems of grassroots people. Grassroots innovation is also defined as innovation by individual or group of people, who often undertake innovative efforts to solve localized problems, and generally work outside the realm of formal organizations. The majority of grassroots people face the problem of poverty and unemployment. The promotion and development of entrepreneurship at grassroots level is a new and is increasingly become a popular approach to economic development. On the other hand, all the grassroots innovation is not leading to entrepreneurship development. Thus, this research tries to conceptualize measures of grassroots innovation and develop a framework on grassroots innovation for entrepreneurship development in Indian context.

Publications

- A study on Evaluating Factors of Community Innovation in Rural Indian Context by Singh, S. and Bhowmick, B Eleventh Biennial Conference on Entrepreneurship, Bookwell, Vol. I (401-409), (2015).
- A study for conceptualization of technological innovation in rural Indian context by Singh, S. and Bhowmick, B International Conference on Innovation and Creativity at Grassroots, IIM Ahmadabad (2015).
- Research on Rural Innovation in India: Evaluating Factors of Micro-finance Innovation. by Singh, S. and Bhowmick, B 8th ISDSI International Conference, Pune, (2015).
- Network of Networks: A Systematic Review of Literature Constructing Rural Development. by Singh, S. & Bhowmick, B. Journal of Agriculture Economics and Rural Development, 3(2), 41-53 (2015)
- An Exploratory Study for Conceptualization of Rural Innovation in Indian Context. by Singh, S. & Bhowmick, B. Procedia- Social and Behavioral Sciences, 207, 807-815. (2015)
- Innovation Network for Entrepreneurship Development in Rural Indian Context: Exploratory Factor Analysis. By Singh, S. and Bhowmick, B. International Journal of Innovation and Technology Management Vol. 13, No. 3 (2016).

Mohd Zuhair

Area of Research: Framework for Designing Health Insurance in Rural India

Supervisor: Prof. Ram Babu Roy

Contact: md.zuhair.cs@gmail.com



About

Zuhair completed M.Tech in Computer Science & Engineering from Birla Institute of Technology, Mesra, Ranchi in 2011 and B.Tech in Computer Science & Engineering from Uttar Pradesh Technical University in 2008. He has worked as an Asst. Professor for six months at Shambhunath Institute of Engineering & Technology, Allahabad and worked for WIPRO Technologies in SAP CRM module for about 11 months. He joined the department in 2012.

Research Abstract

Out-of-pocket payments are the major source of healthcare finance in India as well as in most of the Asian countries. India comes third in the list of countries - with the highest out of pocket expenditure (OPE) on health - in south-east Asia. OPE can be prevented by applying prepayment and pooling of funds to replace or minimize the direct out-of-pocket payments. To push health insurance lower and middle income countries have to make key decision about how to pool risk, generate resources and provide services. The health insurance plan ensures that people must avail health services without facing financial hardship while paying for that. Access to health services enables people to be more productive and active contributors to their families and communities. Health coverage is thus a critical component of sustainable development and poverty reduction, and a key element of any effort to reduce social inequalities.



Jagruti Thakur

Area of Research: Smart Grid

Supervisor: Prof. Basab Chakraborty

Contact: jagruti.t@iitkgp.ac.in

About

Jagruti graduated from South Gujarat University with majors in Electronics and Communication. She has worked as Projects Executive for Geographic Information System (GIS) based Urban Planning projects. She joined the Department in 2013. She is a recipient of BASE (Bhaskar Advanced Solar Energy) 2016 fellowship rendered by Indo US Science and Technology Forum.

Research Abstract

Smart grid is the modernization of present day power grid. A number of issues lies with the present GTD (Generation, transmission and Distribution) of electricity and a need is created for the restructuring of the grid. Her research involves addressing the issues associated with implementation of smart grid in Indian context. The data generated from smart meters would be analysed using various algorithms, so as to understand the level of impact smart grid that creates on improving energy efficiency, preventing electricity thefts and blackouts as well as meeting the requisite demands.

Publications

- Thakur, Jagruti, and Basab Chakraborty. "Intelli-grid: Moving towards automation of electric grid in India." Renewable and Sustainable Energy Reviews 42 (2015): 16-25.
- Thakur Jagruti and Basab Chakraborty. "A study of feasible smart tariff alternatives for smart grid integrated solar panels in India." Energy 93 (2015): 963-975.
- Thakur Jagruti and Basab Chakraborty. "Exploring smart alternative net metering models for smart grid in India", International Conference of Renewable Energy and Research Application 2015, Italy.
- Thakur Jagruti and Basab Chakraborty. "Sustainable net metering model for diversified India", CUE2015-Applied Energy Symposium and Summit 2015, China.

Partha Mukhopadhyay

Area of Research: Epitaxial growth of Compound Semiconductor based Hetero structure Device for High Power Devices in Wireless Products

Supervisor: Prof. D. Biswas

Contact: mukhopadhyay.partha@gmail.com

partha.mukhopadhyay@creol.ucf.edu



About

Partha Mukhopadhyay has submitted his Ph. D. thesis on, “*Epitaxial Growth Optimization of III-Arsenide and III-Nitride on Silicon: Influence of Buffer on MODFET for Low Cost Power Amplifier*”, from RMSoEE, IIT Kharagpur in December 2015. He received his MS (by Research) in Semiconductor Devices from the Dept. of E&ECE, IIT Kharagpur in 2010 and B. Tech (ECE) from Kalyani Government Engineering College in July 2003. He has also completed his PG Diploma on Embedded System in 2005 from Jadavpur University, Kolkata. He has worked for 3 years (2003-2006) with Chatterjee Technologies. Since 2007 he is working at IIT Kharagpur as a research fellow on the compound semiconductor field. Presently he is working on epitaxial growth of II-IV compound semiconductor (ZnO) based photovoltaic devices by MBE at The College of Optics & Photonics (CREOL), University of Central Florida (UCF) as Post-doctoral Research Scientist.

Research Abstract

This research focused on the influence of metamorphic buffer growth conditions on structural and electrical characteristics of III-V based power devices on silicon substrate aiming on-wafer integration, the future of robust and low cost miniaturized electronic system. He has analysed the epitaxial growth morphological dependence of electrical characteristics of AlGaIn/GaN HEMT (High Electron Mobility Transistor) on Sapphire and Si (111) substrate for high power applications and thereby, optimized the epitaxial growth on Si by MBE. Based on this experimental observation he has delivered a novel thermal model and optimized a 2D electrical model to find out the reasons of discrepancy in electrical behaviour among the identical transistors while grown on different buffer/substrate. At the same time in III-Arsenide field his research investigated the epitaxial growth dependency on pseudomorphic AlGaAs/InGaAs based MODFET (Modulation doped Field Effect Transistor), mainly HEMT, aiming low power applications. Then the research advances to develop a novel growth strategy by MBE for GaAs on Si (100) substrate which achieved superior surface morphology required for on-wafer integration of high speed and low power device with Si logic circuits. The scholar has proficiency on Riber Compact-12 MBE and custom designed four chambers 6” SVTA Cluster-Tool MBE at IIT Kharagpur.

Publications

- P. Mukhopadhyay et al. J. Cryst. Growth, vol. 418, pp. 138, March 2015.
- P. Mukhopadhyay et al. Solid-State Electronics, Vol. 104, pp. 101, Feb 2015.
- P. Mukhopadhyay et al. Applied Surface Science, Vol. 324, pp. 304, Jan 2015.
- P. Mukhopadhyay et al. J. Electron. Mater. vol. 43, No. 4, pp. 1263, April 2014.
- P. Mukhopadhyay et al. J. Appl. Phys. vol. 115, no 17, pp. 174507, May 2014.
- P. Mukhopadhyay et al. Appl. Phys. Lett. vol. 105, pp. 073502, August 2014.
- P. Mukhopadhyay et al. IEEE Trans. Nanotechnology, Vol 13, pp. 917, Sept 2014.
- P. Mukhopadhyay et al. J. Vac. Sci. Technol. B, Vol. 31, 3, pp 03C132, May 2013.



Priyanka Laha

Area of Research: Area of Research: Energy Management in Indian context.

Supervisors: Prof. Basab Chakraborty & Prof. Bhaskar Bhowmick

Contact: priyankalaha@see.iitkgp.ernet.in

About

Priyanka completed her M.Tech in Electrical Engineering from IIT Roorkee and B.Tech in Electronics and Communications Engineering (ECE) from West Bengal University of Technology. She has worked as an Assistant Professor for 1.5 years. She joined the department in December 2013.

Research Abstract

Electricity plays a fundamental role to meet the basic human needs, for transportation, and for communication. Sustainable social and economic development requires reliable and affordable access to electricity. With growing economy, using electricity in innovative and sustainable way has become necessary. To be environmentally benign, energy services must be provided with low carbon footprint and low greenhouse gas (GHG) emissions. Renewable energy resources are clean sources of energy that provide energy security, economic development and energy price stability. However changes in temperature, precipitation, humidity, and the frequency and severity of extreme weather affect electricity generation and consumption in India. The research work involves the feasibility of integrating different renewable energy resources keeping in view the variation in Indian climate.

Bipul Krishna Saha

Area of Research: Potential of waste heat recovery in Indian industry

Supervisor: Prof. Basab Chakraborty

Contact: bipul.saha@see.iitkgp.ernet.in



About

Bipul has done M.Tech in Power System and B.Tech in Electrical Engineering (EE) from West Bengal University of Technology. He had worked as an Assistant Professor for 2 years. He had also worked as a Project Engineer for 3 years in First Esco India Pvt. Ltd. He is presently working in the area of Renewable Energy in the context of Indian Entrepreneur.

Research Abstract

India has great potential to employ the ORC (organic Rankine cycle) technology for conversion of low temperature waste heat and renewable energy. In my research, available waste heat and relevant waste heat sources in India and also find out the suitable working fluids for ORC, based on operational, environmental and safety criteria. A feasibility study of selected fluids for ORC is also included for Indian climates along with the component, operation and cost related aspects. A comprehensive study based on available heat sources and sinks shows that India has plenty of waste heat and renewable energy sources for electricity generation by means of ORC; however, condenser operation may be challenging due to wide ambient temperature variation. The study reveals that there is a great opportunity to employ this technology in India provided the nation overcomes challenges related to component selection, finance and maintenance.



Sayani Mondal

Area of Research: Using EGT to Assess Comprehension of C/C++ Programs from Code Reading Pattern

Supervisors: Prof. Partha Pratim Das & Titas Bhattacharjee (Rudra)

Contact: sayani.mondal9@gmail.com

About

Sayani Mondal completed her B.Tech degree in Computer Science and Engineering from BCET, Durgapur under West Bengal University of Technology in the year 2008. Then worked as an Assistant Professor in the Department of Computer Science and Engineering at BCET, Durgapur, from January, 2009 to December, 2013. Completed M.Tech from School of Information Technology, IIT Kharagpur, 2013. Sayani joined the Department in December 2013 as an Institute Research Scholar.

Research Abstract

Over 70% of software development effort is spent in software maintenance comprising bug fixes and version updates. These activities involve fast comprehension of large codebases authored by multiple developers. Developers are mostly trained to write code while in practice they often need to read code. Hence effective and efficient systems are needed to assess the code reading ability of developers. A novice, an intermediate, or an expert level developer has different strategies and styles to navigate a codebase and read code – especially if it is unseen and unknown. Hence effective and efficient systems are needed to assess the code reading ability of developers to estimate their software development skills. The understanding of code reading patterns can be used to build Program Comprehension Support Tools. We use an Eye Tracker, the technique used to record and measure eye movements. With the help of eye-movement data, we can characterize the development of program comprehension strategies.

Publications

- S. Mondal and P.P. Das, "An IDE-Agnostic System to Capture Reading Behaviour of C++ Programs using Eye-Gaze Tracker", In: Proceedings of 5th National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (NCVPRIPG), 2015.

Jignesh Sindha

Area of Research: Development of stability enhancement system of high speed electric three wheelers

Supervisors: Prof. Basab Chakraborty & Prof. Debashish Chakravarty.

Contact: sindha.jignesh@gmail.com



About

Jignesh completed his masters in Industrial Process Equipment Design from Sardar Vallabhbhai National Institute of Technology, Surat and completed his graduation from South Gujarat University with majors in Mechanical Engineering. He has worked as Assistant Professor at Charotar University of Science and Technology, Gujarat. He lead SAE collegiate club and SME students' chapter during this tenure. Beyond other activities, the Formula-F3 car designed and fabricated by his team won Go Green award, first prize in Endurance limit test and third overall performance rank in SAE SUPRA competition organized by SAE India. He joined the department in July 2014. He is also involved in Autonomous Ground Vehicle research group of IIT Kharagpur.

Research Abstract

Electric mobility is a future of transportation. Three wheelers are the most suitable mode of personal transport. Considering the congested roads, increasing number of car users had added severe problems of traffic in sense of road congestion and parking problem. Small vehicle with good efficiency, excellent maneuverability and safety equivalent to car will be the need for city transport. Electric three wheelers are best fit for this requirement set and becoming popular too for public transport. However, speed limitation due to poor roll over resistant had restricted its market to public transport. Many research groups in various industries and Universities are developing active tilt control mechanism to push limits of safe speed of three wheelers. His research focuses on dynamic analyzing the tilting three wheelers and developing more stable control system with least computation and sensory requirement.

Publications

- Sindha, Jignesh, Basab Chakraborty, and Debashish Chakravarty. "Rigid body modeling of three wheel vehicle to determine the dynamic stability -A practical approach." Transportation Electrification Conference (ITEC), 2015 IEEE International. IEEE, 2015.



Piyush Kumar Dongre

Area of Research: UGV-UAV Collaborative Terrain Mapping

Supervisors: Prof. Ram Babu Roy & Prof. D.K. Pratihari

Contact: piyushdongre@iitkgp.ac.in

About

Piyush completed M.Tech in 2014 in Visual Information Processing & Embedded Systems from dept. of ECE, I.I.T Kharagpur and B.E in 2011 in Electronics & Telecommunication Engineering from Bhilai Institute of Technology (Durg). He has joined the department in 2015.

Research Abstract

Autonomous Terrain Mapping & Exploration is in the core of autonomous cars to rovers deployed in space exploration. Unmanned Ground Vehicle & Unmanned Aerial Vehicle has been used for this task, both have their own strength and weakness in terms of their measurement accuracy to area coverage. Recent advancement suggests employing both for better results. Our research is focussed in establishing synergy between these two platforms for global coverage, optimal path and obstacle avoidance. Visual Simultaneous Localisation And Mapping (V-SLAM) algorithms based on the video input, extracting information like interest points, depth estimation using stereo geometry needs to be developed for both these platforms. Major challenges in such application for making it operate in real time are video processing, computation sharing & networking, power consumptions etc.

Manali Chatterjee

Area of Research: Business Analytics and organizational performance

Supervisor: Prof. Titas Bhattacharjee

Contact: mana.chatt@gmail.com



About

Manali completed her post graduation and graduation in Computer Science & Engineering from West Bengal University of Technology, Kolkata. She has work experience of 3 years as assistant professor in engineering college affiliated under WBUT. She joined this department in December 2014.

Research Abstract

Evidence of the competitive value of business intelligence (BI) and analytics solutions is growing. Fact-based decision making is spreading throughout commercial, non-profit, and public sector organizations. An increasing number of organizations are making BI and analytics functionality more broadly available to all decision makers inside and outside the organization. So, over the long term, BI solutions will continue to be applied to optimize a wide array of processes in an effort to improve performance management and organizational competitiveness. The research focusses on corporate governance practices in technological start-ups, whether its effect is good or bad in organizational performance measuring.



Aashish Kumar

Area of Research: Development of Innovative Frame-work for Removal of Heat from Electrical & Electronic Circuits Using Thermoelectric Phenomena.

Supervisors: Prof. Manoj K. Mondal and Prof. Pranab K. Dan

Contact: aashishkumar@iitkgp.ac.in

About

Aashish completed his Master of Engineering in Power Electronics from Birla Institute of Technology (BIT), Mesra, Ranchi. He has worked for 6 months in Cognizant Technology Solutions as a Programmer Analyst (Trainee). He also has a professional experience as an Assistant Lecturer for the period of 2 years in Uttarakhand Technical University, Dehradun.

Research Abstract

Continued miniaturization of the electrical and electronic circuits has resulted in a substantial rise in the amount of heat generation. Thus, removal of heat is of paramount importance to ensure the reliability and performance of these circuits. There has been significant research in thermoelectric phenomena for removal of heat from various components and equipment. This research targets to use both Seebeck and Peltier effects in combination so as to make a framework that is self-sustainable and comes with improved efficiency as compared to existing systems. A theoretical model has already been developed and necessary components are in process of being procured.

Publications

- Mondal, Manoj Kumar; Aashish Kumar and Bishnu Pada Bose. "Entrepreneurship education through MOOCs for accelerated economic growth." MOOCs, Innovation and Technology in Education (MITE), IEEE 3rd International Conference. (2015): 407 – 411.

Bishnu Pada Bose

Area of Research: Brick made from waste material

Supervisors: Prof. Manoj K. Mondal and Prof. Pranab K. Dan

Contact: bosebishnu@gmail.com



About

Bishnu completed his Master of Technology in Geotechnical Engineering from National Institute of Technology (NIT), Rourkela. He has experience from varied industries like Larsen & Toubro Limited as a Project Engineer for 10 years and ITC Limited as an Assistant Project Manager for 5 years. He joined the department in December 2014.

Research Abstract

The research aims to develop value-added construction materials such as bricks out of mine spoils that are presently of no economic value and is posing serious environmental threat. The core waste materials which are being explored are mine-spoils and biological waste. The mine spoils causes enormous pollution to air, water, and soil thereby rendering the area unfit for habitation. However, very little research is found in scholarly publications on its meaningful use. On the flip side, there is growing scarcity of construction materials originating from nature such as use of topsoil for manufacturing bricks. Topsoil that is used for making brick is the most precious for healthy botanical growth. Increasing use of top soil is dangerous for food security of the world population. Finding an alternative to soil for making brick is highly imperative and timely. The present research work is directed to evolve technology for using waste materials, particularly mine spoils, to replace soil to make bricks and other construction materials. Another focus of the research is to reduce the weight of construction materials using organic matters such as rice husk and natural fibre.

Publications

- Mondal, Manoj Kumar; Aashish Kumar and Bishnu Pada Bose. "Entrepreneurship education through MOOCs for accelerated economic growth." MOOCs, Innovation and Technology in Education (MITE), IEEE 3rd International Conference. (2015): 407 – 411.



Sireesha Tamada

Area of Research: Optimisation in Product Design and Realisation Process

Supervisor: Prof. P. K. Dan

Contact: sireeshatamada@iitkgp.ac.in

About

Sireesha completed M.E. in 2014 in Power Electronics from Electrical and Electronics Engineering Department, B.I.T Mesra and B.Tech in 2011 in Electrical Engineering from Biju Patnaik University of Technology (BPUT). She joined the department in December 2014.

Research Abstract

Analytics is a statistical tool which transforms data into indicators which support the decision-making process. Optimization in product design can be achieved to a great extent by implementing analytics on the vast extracted data. Data accessed from products viz. consumer durables (like air conditioners) through remote sensors and controllers help to capture the operating history and performance characteristics over a time period. There are various tools like Quality Function Deployment (QFD), Design of Experiments (DoE), Taguchi etc which are used to obtain customer feedbacks and opinions for proper design optimization leading to a good product. Data mining can be applied to the huge database created through the obtained data which can be used for further extraction. This information is used for improving the product feature and optimization where consumer feedbacks and reviews are used in developing products in context of customer requirements.

Manish Chandra

Area of Research: Modelling for product feature optimization using reverse engineering and robust design methodology

Supervisor: Prof. Pranab Kumar Dan

Contact: manishchandra@iitkgp.ac.in



About

Manish Chandra has completed his B.Tech in 2011 in Mechanical Engineering from Cochin University of Science and Technology (Cochin, Kerala) and M.Tech in 2014 in Industrial and Management Engineering from Manufacturing Engineering Department NIT Jamshedpur. He also worked as Assistant Professor, Mechanical Engineering Department, at MVN University, Palwal Haryana.

Research Abstract

Product development is one of the major concerns of any manufacturing company. Especially, when the market requirements varying continuously and at the same time quality and cost goes hand in hand. And hence the Product design plays the deciding role in order to achieve cost reduction and improvement in quality and simultaneously it plays pivotal role in minimizing the product development time. Modelling is a real or conceptual structure intended to serve as a support or guide for the building a product. In this field there is a wide scope of enhancing the design procedures in order to achieve improved quality and cost reduction. So his research is broadly focused on developing a new model for optimized product design using current edge technologies.



Sanyka Banerjee

Area of Research: Product Design and Optimization

Supervisor: Prof. Pranab Kumar Dan

Contact: sanyka.banerjee@iitkgp.ac.in

About

She has completed her M.Tech. in Industrial Engineering and Management from Maulana Abul Kalam Azad University of Technology (Formerly known as WBUT), West Bengal. She completed her Bachelor of Engineering in Aeronautical Engineering from St.Peters' College of Engineering and Technology, Chennai. She joined the Department in July 2015.

Research Abstract

Robustness is defined as reducing variation in a product without eliminating the causes of the variation. In other words, it refers to making the product or process insensitive to variation. This variation (sometimes called noise) can come from a variety of factors. The focus is basically on the robust design of a product and optimizing the functionality of the product by using Computed Aided Design (CAD), Computer Aided Engineering (CAE) and simulations. Currently investigation on the relevant literature regarding the topic is being carried out for identifying the research gap.

Himadri Bhusan Giriya Sankar Bhuyan

Area of Research: Automatic Analysis and Interpretation of Indian Classical Dance using Kinect.

Supervisor: Prof. Partha Pratim Das

Contact: himadribhuyan@gmail.com



About

Himadri completed his M.Tech in Information and Communication Technology from IIT Kharagpur and B.Tech in CSE from BPUT, Orissa. He joined this department in July 2015.

Research Abstract

Indian Classical Dance (ICD), an ancient heritage of India, consists of visual (posture, movements, and expressions), auditory (music, tempo, rhythm, and intonation) and textual (lyric of the song) information that tell a story through body movements, hand gestures, vocal and instrumental music, facial expression (emotion), costume, and make-up. With time these dance forms have been interpreted and performed by different artist indifferent ways and various sets of complex rules have emerged for body postures and gestures.

In this work we intend to automate the analysis and interpretation of different forms of ICD and extensively use Bharatanatyam for our explorations. As such little work has been done in computer analysis of dance as the capture of multimedia aspect of dance has been a challenging task. And whatever little research exists, they deal primarily with Western dance forms like Ballet, Samba, and Salsa. There is hardly any work on ICD.

Recent advances in short-range depth imaging technology have led to the development of affordable multimedia cameras like Microsoft Kinect that can detect and track various human movements in real-time. We use Kinect here to analyse and interpret the multimedia aspects of ICD.



Saurabh Singh Thakur

Area of Research: Social Network Analysis

Supervisor: Prof. Ram Babu Roy

Contact: saurabhjan07@gmail.com

About

Saurabh completed his M.Tech. degree in Information and Communication Technology from IIT Kharagpur in 2014. He completed his Bachelor of Engineering degree in Computer Science & Engineering from Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal. He has worked as Lecturer from February 2011 to July 2014 and Assistant Professor from Jan 2015 to June 2015 at NIT Jamshedpur. He joined this department in July 2015.

Research Abstract

Social network analysis (SNA) is the process of studying social structures through the use of network and graph theories. It characterizes networked structures in terms of nodes (individual actors, people, or things within the network) and the ties or edges (relationships or interactions) that connect them. Examples of social structures commonly visualized through social network analysis include social media networks, friendship and acquaintance networks, kinship, disease transmission and sexual relationships. These networks are often visualized through graph in which nodes are represented as points and ties are represented as lines.

Social network analysis has emerged as a key technique in modern sociology. It has also gained a significant following in anthropology, biology, communication studies, economics, geography, history, information science, organizational studies, political science, social psychology, development studies, and sociolinguistics and is now commonly available as a consumer tool.

The objective is to analyze the Drug-Disease-Target network for the purpose of drug repositioning. Drug repositioning (also known as drug re-purposing, re-profiling, re-tasking or therapeutic switching) is the application of known drugs and compounds to new indications (i.e., new diseases).

Sourabh Mandol

Area of Research: Product Design and Development

Supervisors: Prof. Pranab Kumar Dan & Prof. Manoj Kumar Mondal

Contact: sourabh.mandol@iitkgp.ac.in



About

Sourabh completed his M.Tech in Industrial Engineering & Management from Maulana Abul Kalam Azad University of Technology, West Bengal (Formerly, West Bengal University of Technology). He completed his B.Tech. in Mechanical Engineering from Swami Vivekananda Institute of Science and Technology, West Bengal and joined the department in July 2015.

Research Abstract

The broad field of product design and development inculcates the process of creating a new product or developing an existing product to satisfy the need of the end user. With the use of Computer Aided Design (CAD) and Computer Aided Engineering (CAE) methodologies, emphasis of a new realm of concept generation can be achieved to obtaining desired product specification which satisfies customer's need. The goal is to design and develop a product which will provide all the desired characteristics, involving a thorough and in-depth study of the product behaviour under various known condition, to lay the foundation of a new concept generation.

Publications

- Pranab K Dan, Sourabh Mandol, "An Optimization Approach to Product Design in Modeling Gearbox Set", Proceedings of the World Congress on Engineering and Computer Science, WCECS 2015, Vol II, October 21-23, 2015, San Francisco, USA.
- Sourabh Mandol, Debraj Bhattacharjee, Pranab K Dan, "Robust optimization in determining failure criteria of a planetary gear assembly considering fatigue condition", Structural and Multidisciplinary Optimization, 2015, Springer Berlin Heidelberg. DOI: 10.1007/s00158-015-1336-7. (Online first)



Debraj Bhattacharjee

Area of Research: Product Analytics and Modelling

Supervisors: Prof. Prabha Bhola and Prof. Pranab K. Dan

Contact: debraj1@iitkgp.ac.in

About

Debraj completed his M-Tech in Industrial Engineering and Management from School of Engineering and Management[Maulana Abul Kalam Azad University of Technology, West Bengal (Formerly known as West Bengal University of Technology)] , 2015 and B-Tech in Electronics & Communication Engineering from Narula Institute of Technology.

Research Abstract

Product analytics is a specialized application of business intelligence (BI) and analytical software that consumes service reports, product returns, warranties, customer feedback and data from embedded sensors to help manufacturers evaluate product defects, identify opportunities for product improvements, detect patterns in usage or capacity of products, and link all these factors to customers. Product analytics can also incorporate feeds from social platforms to track complaints about products. By analyzing product data feeds in real time, this software can proactively alert manufacturers to service and replacement needs in reactive as well as preventive maintenance scenarios, and help route service requests to the proper individuals or, with the help of machine-to-machine (M2M) technologies, perform service remotely.

Publications

- Sourabh Mandol, Debraj Bhattacharjee, Pranab K Dan, “Robust optimization in determining failure criteria of a planetary gear assembly considering fatigue condition”, Structural and Multidisciplinary Optimization, 2015, Springer Berlin Heidelberg. DOI: 10.1007/s00158-015-1336-7. (Online first)

Jayshree Patnaik

Area of Research: Purpose Driven Entrepreneurship in context of Urbanisation in India

Supervisor: Prof. Bhaskar Bhowmick

Contact: jayshree_patnaik@iitkgp.ac.in

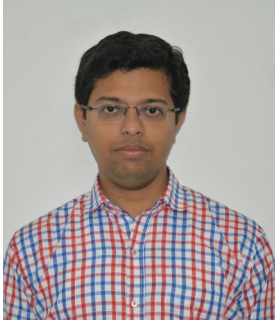


About

Jayshree completed her M.Tech. in Manufacturing Process and Systems from KIIT University, Bhubaneswar in 2015. She completed her B.Tech in Mechanical Engineering from (ITER), Siksha 'O' Anusandhan University, Bhubaneswar in 2013. She joined the Department in July 2015.

Research Abstract

With massive urbanisation, there is a need for entrepreneurial solutions to improve the urban well-being of citizens. Purpose Driven Entrepreneurship focuses to solve problems related to urbanization by thoroughly analyzing social, economic, political and environmental issues. Purpose driven entrepreneurship has so far been neglected and needs more research and practice. Some Entrepreneurs are driven by purpose, a desire to make a social and environmental impact. The focus is to find how a sense of place may impact fields of care for such entrepreneurs and how they can engage with different citizens and public officials to solve problems.



Abhijit Debnath

Area of Research: Multimedia Data Analytics

Supervisors: Prof. Krothapalli Sreenivasa Rao & Prof. Partha Pratim Das

Contact: dnabhijit@gmail.com

About

Abhijit completed his M.Tech and B.E from School of Information Technology, IIT Kharagpur and Department of Information Technology, IIST, Shibpur (erstwhile BESU, Shibpur) respectively. He has five years and nine months of work experience in National Institute of Electronics And Information Technology (NIELIT), an autonomous scientific society under Department Of Electronics and Information Technology (DeitY), Govt. of India, posted at Agartala. He joined NIELIT as Scientist 'B' and later promoted to Scientist 'C'. He joined the department in December 2015.

Research Abstract

Multimedia data has become as common today as email was 20 years ago. Consumer electronic markets have enabled individuals to record and transmit images or video with cell phones. Even the simple point-and-shoot camera can not only add date stamps but also geo-code where the photo was taken. Because of our ability to tweet, text and email from work, home and on our mobile devices, each day we create vast amounts of information about the world around us and consume information from commercial sectors via podcasts, internet streaming broadcasts, radio, cable, and satellite. To some, this may seem like nirvana, but for those who must address certain policy issues or handle complex emerging events, their tasks quickly become overwhelming.

Manojit Ray

Area of Research: Energy

Supervisor: Prof. Basab Chakraborty

Contact: manojitray7@gmail.com



About

Manojit completed his B.Tech from IIT Kharagpur and MBA from IIM Calcutta. He brings in a decade long leadership experience in energy industry, serving federal & constituent governments of nation states, fortune 500 multinationals, statutory regulatory bodies and international multilateral financial institutions. He has served in India, United States and Hong Kong in diverse capacities including that of the member of the board of directors. His interests include innovative business solutions and creative application of technology.

Research Abstract

Addressing security needs of modern energy generation, transmission and distribution systems in view of anticipated proliferation of IoTs in demand side & supply side resource management. Assessment of prevailing standards, development of new ones and applicability of fuzzy embedded system design practices in designing secure IoTs forms the core area.



Shibabroto Banerjee

Area of Research: Analysis of Plethysmographic signals

Supervisors: Prof. Sujoy Ghose & Prof. Partha Pratim Das

Contact: shibabroto@gmail.com

About

He is currently serving the Department of Computer Science and Engineering as Senior Technician. He is working as the system administrator of National Digital Library Project hosted at IIT Kharagpur and is in-charge of the servers. He did his Masters in Information Technology from Sikkim Manipal University – Distance Education. He is pursuing M.S. programme from Rajendra Mishra School of Engineering Entrepreneurship.

Research Abstract

Pulse Oximeter is used to monitor condition of the human heart. The signals obtained from the pulse oximeter are called plethysmographic signals. Currently analysis of the plethysmographic signals are not undertaken by the doctors. However they contain a lot of information about the condition of the patient. A rich information is embedded in these signals. The objective of his research is to analyse these signals and help the doctors in their diagnosis. Intelligent digital signal processing techniques are being explored to extract patterns in these signals. A decision support system will be built using the analysis. This will help in early diagnosis and treatment of heart patients.

SEEDS



- ♦ Abhijeet Anand
- ♦ Arijit Mitra
- ♦ Bora Jagannadha Swamy
- ♦ Neha Arora
- ♦ Pruthesh Chiddarwar
- ♦ Saurav Kumar Singh
- ♦ Avinash Thavva
- ♦ Sampada Bhootna
- ♦ Vishal Pandita
- ♦ Rajat Suman
- ♦ Pratik Raj
- ♦ Ankit O Mundada



Abhijeet Anand

Area of Research: Compact Air-Conditioning System

Supervisor: Prof. Manoj Kumar Mondal

Contact: tulsi.iitkgp@gmail.com

About

Abhijeet completed his B.Tech in Mechanical Engineering and is pursuing M.Tech in Engineering Entrepreneurship. His interests lie in the field of education, social service, design and manufacturing. He wants to start-up a product and service based company.

Research Abstract

The above project is primarily to develop a compact Air-Conditioning system which involves studying the various phases of development of a hardware product, right from inception phase, to designing, to prototyping and then possible manufacturing. The project is also a new hardware product in the Indian market and makes appropriate sense in developing one from an entrepreneurial stand-point. The project is about modelling a miniature air-conditioning device which will be energy efficient, environment friendly, portable, easy to use and gives instant cooling on localised area. It will look like a DC fan integrated with air-conditioning components. In other words we can say it is a compact air-conditioning system.

Arijit Mitra

Area of Research: Classical and Quantum Thermodynamics and Kinetics, Lead-free Solder, Electrochemistry, Materials Characterization, Nanomaterials

Supervisor: Prof. Basab Chakraborty

Contact: arijmitra@metal.iitkgp.ernet.in



About

Arijit is a final year student in the joint B.Tech – M.Tech Programme of Metallurgical and Materials Engineering and Engineering Entrepreneurship. His key interests lie in linking the Core Engineering Sciences with the Entrepreneurial Culture and promote Engineered Product Based Start ups.

Research Abstract

My research is based on developing solutions for VLSI Technology, aiding in the miniaturization of electronic components. I am currently working on developing lead free solders for Flip-Chip and electrical contact applications using electrochemical routes, offer better electrical and thermal properties.

Bora Jagannadha Swamy

Area of Research: Magnetism and Magnetic Materials

Supervisor: Prof. Manoj Kumar Mondal

Contact: jagannadh159@gmail.com



About

Jagannadha completed Bachelor's degree in Metallurgical and Materials Engineering and pursuing Master's degree in Engineering Entrepreneurship. He wants to be an Intrapreneur rather than an Entrepreneur and work for the growth of the company. He is an avid traveller, sports fanatic.

Research Abstract

Nowadays, every nation is concerned about two things: non-conventional energy sources and climate change. One of the major reasons being 'pollution' from various sources, it has not only affected the lives of creatures but has also altered the ways for exploiting energy. So, the only ways are either to reduce the consumption of conventional sources of energy or to choose an alternative source of energy. There have been many other alternative energy sources being focused by others like solar, wind and tidal based energy sources but very few have focused on the 'Stored Magnetic Energy'. Neodymium permanent magnets are stronger than the electromagnets and they can replace the latter on a large scale with little investment. His research focuses mainly in providing an energy-efficient, cost-efficient and a pollution-free form of energy source for our future generations.

Neha Arora

Area of Research: Machine Learning

Supervisor: Prof. Partha Pratim Das

Contact: neha178arora@gmail.com

About

Neha is a final year student and pursuing M.Tech in Engineering Entrepreneurship. With interests in the fields of Mathematics, Computing and Analytics, she has pursued quite a lot of projects and internships in the same direction to widen her horizon and explore new opportunities.

Research Abstract

In one of the projects, I use the data from NCL about the authors and their publications in the field of NLP and using a network, try to predict the best author to work with and their overlapping areas research, given a query for a topic. Also, I am working on a project that uses motion data from Kinect and tries to classify the different frames into identifiable postures. Hence such posture recognition can have applications in medical facilities, professional training, etc.



Pruthesh Chiddarwar

Area of Research: Neonatal products

Supervisor: Prof. BasabChakraborty

Contact: pruthesh.iitkgp@gmail.com

About

Pruthesh has undertaken a dual degree course with bachelors in Chemical Engineering and masters in Entrepreneurship engineering. He is currently pursuing a project in the neonatal product field.

Research Abstract

The above project currently involves design and development of a cost effective transport baby incubator which can cater the bottom of the pyramid market. Research shows major requirements of baby to stabilise its health are temperature and humidity control. Therefore, a battery run incubator providing these two facilities can prove quite beneficial for the rural babies which don't have access top primary healthcare facilities at the time of their birth. Hence, the product is designed with a view to maintain and operate remotely from rural primary healthcare centres.

Saurav Kumar Singh

Area of Research: Automated Panoramic Head

Supervisor: Prof. Ram Babu Roy

Contact: saurav.subhash.singh@gmail.com



About

Saurav completed his B.Tech in Agricultural and Food Engineering and pursuing M.Tech in Engineering Entrepreneurship. With interests in the field of education, Virtual Reality and Real-estate, he has been an integral part of a couple of good start-ups from IIT Kharagpur.

Research Abstract

This project is primarily a hardware project which aims at studying the various phases of development of a hardware product, right from inception phase, to designing, to prototyping and then possible manufacturing. The project is also a new hardware product in the Indian market and makes appropriate sense in developing one from an entrepreneurial stand-point. The project is about developing an Automated Panoramic head, which will help capture spherical panoramas automatically without continuous manual intervention. Google uses a 15 camera gimbal for its "street view" data collection. The aim is to generate moderately good quality data at a fraction of the hardware cost.

Avinash Thavva

Area of Research: Magnets

Supervisor: Prof. Manoj Kumar Mondal

Contact: avinash04kgp@gmail.com



About

Avinash completed his B.Tech in Mechanical Engineering and pursuing M.Tech in Engineering Entrepreneurship. He is also pursuing a minor in Economics. He has worked in educational and service based start ups. He loves reading books on fiction and philosophy.

Research Abstract

With technological advancement, the dependence on energy is accelerating at a rapid pace, and the state of our oil reserves is bleak. The world needs to shift its reliance from carbon based resources to alternative sources of energy. Though enough emphasis is being placed on alternative and cleaner sources of energy, less emphasis is being placed on perpetual motion systems that can be developed with no power source at all. Permanent Magnets are the best source to address this need. He is working on the design aspects of a polymer production machine to convert it from batch production process to continuous production using magnets. In addition to this, he is also working on understanding of the different modes of production of magnets.



Sampada Bhootna

Area of Research: Development of commercial grade Mushroom d
derived Beta-glucan

Supervisor: Prof. Manoj Kumar Mondal

Contact: sampada.iitkgp@gmail.com

About

She has completed her B.Tech in Biotechnology & Biochemical Engineering and pursuing M.Tech in Engineering Entrepreneurship.

Research Abstract

Various researches show that Mushroom derived Beta-glucan can be used as an immuno supplement. Her research work is dedicated towards development of commercial grade mushroom derived beta-glucan nutraceuticals.



Vishal Pandita

Area of Research: Geo-Technical Air Conditioner and Nasal Filter

Supervisor: Dr. Pranab Kumar Dan

Contact: vishal.pandita.7@gmail.com

About

Vishal completed his B. Tech. in Mining Engineering and pursuing M. Tech. in Engineering Entrepreneurship. He holds keen interest in reading literature and writing. He has won several literary competitions. He feels that life is voyage where one should exercise their free will fully and live on their own terms without any external influence.

Research Abstract

Geo-Technical Air Conditioner exchanges heat with the earth's crust to maintain a favourable room temperature. The principal used is that the temperature of rock strata at a depth of under 10 m is relatively cooler than the surface in summers and vice versa in the winters. This heat difference can be utilized to create a thermodynamically driven air-conditioner with low energy needs and good effect. This product can save energy and earn carbon credit.

Nasal filter is the present project and aim to create a portable, light and handy product that can be used in mining industry. The nasal filter will employ reverse osmosis as well as chemical adsorption to remove particulate matters (PM10) and harmful gases from air, thus preventing silicosis and other particulate related diseases. This product is highly effective and can be used in environment with unbearable dust content. The product presently is in concept phase.

Rajat Suman

Area of Research: Indian Logistics Industry

Supervisor: Prof. P. K. Dan

Contact: rajatsuman002@gmail.com



About

Rajat is pursuing his M.Tech in Engineering Entrepreneurship.

Research Abstract

Indian Intercity Logistics Industry is majorly a part of technology laggards. As truckers, a market fit product is being created from behaviour and adaptability of the user of this segment. Research focuses on efficient ways to cover the network of the Industry and create high performing optimized systems.

Pratik Raj

Area of Research: Creating Light Bricks using Industrial Wastes and by-products and analysis of their physical properties.

Supervisor: Prof. Manoj Kumar Mondal

Contact: pratikraj008@gmail.com



About

Pratik completed his B.Tech in Mining Engineering and pursuing M.Tech in Engineering Entrepreneurship. He holds keen interest in entrepreneurship, innovation, analytics, consulting and product development. He is a sports enthusiast and plays basketball.

Research Abstract

Conceptualizing a product by analysing demand and doing market research in the construction industry. The desired bricks were created using Husk, Fly-ash and OB Dump. The bricks produced had different desired properties in contrast to the conventional bricks. The attributes where the research focussed were weight, strength and ease of handling in addition to being environmental friendly. More than 100 standard samples were made in pursuit to obtain primary data. Peak strengths of samples with varying ingredient's concentrations were determined by destructive testing of samples using Universal Testing Machine.

Predictive model to estimate strength of samples with varying concentration of cement and husk was designed. R and Strata (Data Analysis and Statistical Software) were used in numerical modelling using primary data. The core motive of the research is to develop environmental friendly light bricks to facilitate ease of handling while making partitions and also to minimize cost of production by utilizing waste and by-product from different industries.



Ankit O Mundada

Area of Research: Machine Learning

Supervisor: Prof. P. K. Dan

Contact: aomundada@gmail.com

About

Ankit is a Dual Degree student of the department of Mechanical Engineering integrated with Engineering Entrepreneurship course of the RMSoEE.

Research Abstract

Ankit is working on his startup which is in the field of Natural Language Processing and Knowledge Acquisition. His work involves the application of Distributed Vector Spaces. He is working under the guidance of Prof. P K Dan.



Pranav Chavan

Area of Research: Internet of Things

Supervisor: Prof. Ram babu Roy

Contact: pranav.chavan.iit@gmail.com

About

He is a 5th year M.Tech student at the Rajendra Mishra School of Engineering Entrepreneurship, IIT Kharagpur with B.Tech in Electronics & Electrical Communication Engineering, IIT Kharagpur. With interests in the field of Education, Start-ups and Future Tech, he had the privilege to be a part of founding team of TapEx, the online food ordering portal in IIT Kharagpur Campus.

Research Abstract

The project is primarily a software project which aims at studying the various communication protocols implemented for Internet of things. The project is also about designing a new communication protocol for sensors used for monitoring health parameters in healthcare domain. The protocol is about developing an efficient way, which will help communicate faster with power efficiency and minimum bandwidth. The protocol if developed will bring down the cost of development and implementation of IoT in harsh conditions and can be used in day to day life.

Global Entrepreneurship Summit 2016

Entrepreneurship Cell is a student body of IIT Kharagpur, formed in 2006 solely with the purpose of inspiring and guiding start-ups in IIT Kharagpur and to foster an entrepreneurial culture in the campus of IIT Kharagpur. We now play that role on a national scale and have won acclaim across the world.

E-cell has two flagship events:

- ♦ Global Entrepreneurship Summit (GES): This is our flagship event, started from 2007 as "Entrepreneurship Summit" but renamed due to international participation in our competitions and collaboration with universities world-over.
- ♦ Entrepreneurship Awareness Drive (EAD): The first EAD was held 5 years ago in 2009 and was a unique event that travelled to 10 major cities in India in 10 days promoting entrepreneurship and creating awareness about opportunities for entrepreneurs.

E-Cell today has more than 50 members from within IIT Kharagpur, and several more outreach members from various other colleges in the city. Taking the spirit of Entrepreneurship to new heights, this year Entrepreneurship Cell, IIT Kharagpur organized Global Entrepreneurship Summit (8 to 10 January). We witnessed a participation of over 1200 students this year. Over the years, GES has witnessed the speaking aura of various eminent personalities. The opening ceremony of GES was conducted at Kalidas Auditorium, IIT Kharagpur, where many IIT Kharagpur dignitaries including Prof. Partha Pratim Chakrabarti, Director IIT Kharagpur and Prof. Partha Pratim Das, Head, Rajendra Mishra School of Engineering Entrepreneurship enlightened the participants with their words of wisdom. He spoke about spirit of entrepreneurship and how it is benefiting the nation as a whole. The welcome note was followed by lamp-lighting ceremony by all the dignitaries and guests of honors. The opening note was delivered by **Prof. Partha Pratim Chakrabarti, Director of IIT Kharagpur**. He provided the participants with an insight into the life of Prof. Rajendra Mishra, one of the founders of IIT Kharagpur in 1951.

The opening Ceremony also witnessed the echoing and encouraging words of **Mr.B.K.Chaturvedi** , ex- cabinet secretary and **Mr. Vikas Agrawal**, CEO, OnePlus India. He started his talk by describing Entrepreneurship as the Art of Taking Risks. He emphasized on the importance of vision among Entrepreneurs and explained how agility and presence of mind comes in handy. Also , many distinguished guests had participated in interactive panel discussions and guest lectures which upheld the spirit of entrepreneurship amongst the students and encouraged them not to follow the herd. The panel discussion included prestigious companies like Samsung, NICE, AugRay, EduGild, BSE and FreshDesk. The students learnt almost everything here , from cloud computing to funding of startups. Then the highlight of GES 2K16 , an interactive session with **Deep Nishar**, CEO Softbank International. He is a KGP alumnus. Children really connected to him as he experienced the same things in the same hall as he was sitting a few years back!!We also had a unique startup - camp , which had recognized startups like Magnox and Gunpoint Technologies. Students got an opportunity to apply in a total of 20 startups and if they were good enough , they would be provided internship to the students.Finally, the awatracing event closed with aw-attracting guest speeches by **Mrs.Vani Kola** , MD of Kalaari Capital. She told students on what she expects from pitching startups, which is the basic mantra for a startup to get funding! Then, the awesome presentation by **Mr. Nishant Rao** , COO Fresh0esk. He gave his success mantra and how to begin a successful life. Every participant of GES 2016 took an amzing list of experiences, questions, answers and inspirations, which displays the events success.

GES has swept the country with its uncompromised quality and immense reach. It may be a tiny step on our part, but it is a giant leap for our ambitions to builds an enterprising India.







Rajendra Mishra School of Engineering Entrepreneurship
Indian Institute of Technology Kharagpur
West Bengal, India 721302