



National Institute of Technology Kurukshetra

(Institution of National Importance)



Research & Development Newsletter

Vol. 2 | Issue 1 | January 2018

From the Desk of Dean Research and Consultancy

The New Year 2018 brings renewed aspirations and hope of success, peace and prosperity. And with the same spirit, we present 2nd Volume of the R & D Newsletter of NIT Kurukshetra. This issue presents glimpses of R & D activities undertaken by the faculty, patents granted/filed, conferences organised, and awards of Ph.D. degrees during the odd semester of the academic session 2017-18. We have also signed Memorandums of Understanding with different R & D organisations and academic institutions with major emphasis to undertake joint research efforts and develop close interaction among all stakeholders. An innovation and incubation centre has also been initiated in the institute which aims to provide the students with mentorship from industry and academia alike. The Centre will enable the students to experiment with their innovative ideas and showcase their creative best.

Looking forward to your continued support.

Best regards,

Prof. Brahmjit Singh

ABOUT NIT KURUKSHETRA



Vision

To be a role model in technical education and research, responsive to global challenges

Mission

To impart quality technical education that develops innovative professionals and entrepreneurs and to undertake research that generates cutting edge technologies and futuristic knowledge, focusing on the socio-economic needs.

National Institute of Technology Kurukshetra was established as Regional Engineering College in 1963 to impart technical education and provide research facilities in different disciplines of engineering and technology. With a humble beginning of 120 students in B.Sc. (Engg.) degree course of study, the Institute recognised as Institution of National Importance now boasts of running 7 B.Tech., 22 M.Tech., MBA, MCA and Ph.D. programmes in all major areas of engineering, technology, sciences, management and humanities. The academic fabric of the Institute consists of Departments, Schools and Centres.

Located in the land of Mahabharata-Kurukshetra, the Institute spreads over 300-acre lush green and environment friendly campus. Ours is a fully residential Institute with excellent on-campus accommodation facilities for students, faculty and staff. There are ten boys and four girls hostels with total capacity of over 5000 student residents.

NIT Kurukshetra is committed to fundamental and applied research in frontier areas of engineering, technology and science streams. Expanding list of sponsored research projects reflects its noteworthy position in cutting edge research.

Teaching and learning processes and research and development activities are supported by central facilities. The central library with state-of-the-art facilities houses a huge collection of over 1, 90,000 documents. The library subscribes to over 4500 journals and online resources. The centre of computing and networking provides computing and networking infrastructure for information access to students, faculty and staff through a campus wide local area network with OFC backbone. Focussed attempts are made for the growth of the students by providing them with an array of extra- and co-curricular activities. State-of-the-art sports and games facilities including swimming pool, and technical and cultural clubs contribute to wholesome health and holistic development of the students.

During its exemplary journey of over five decades, NIT Kurukshetra has been successful in making remarkable strides in teaching, learning, research and outreach activities.

SPONSORED RESEARCH PROJECTS

Design and Development of Solar Assisted Solid Desiccant Air Conditioning System for India

Sponsor: Science and Engineering Research Board (SERB), Govt. of India



Dr. Avadhesh Yadav

Department of Mechanical Engineering
Email: avadheshyadava@nitkkr.ac.in

The objective of this project is to fulfill the requirements of human comfort conditions throughout the year with the use of solar energy. A mathematical model of desiccant wheel will be proposed, which will increase the performance of desiccant wheel with novel designs at low regeneration temperature. Thermal analysis of the system and performance of each component will be analyzed on the basis of adequate indices (coefficient of performance, dehumidification effectiveness and sensible effectiveness ratio). In this project, different configuration cycles (ventilation cycle, regeneration cycle and mix cycle) will be studied and then the system will be experimentally investigated. Economical aspect will be analyzed for year round performance of desiccant air conditioning system. The experimental setup will be controlled by a PLC system, through which rotational speed of desiccant wheel, air flow and water flow will operate automatically. The auxiliary heater will be controlled on set temperature of air, which is measuring after passing through solar air collector.

Performance Enhancement of Vapor Compression Refrigeration System of Small Capacity Using Ejector as an Expansion Device

Sponsor: Science and Engineering Research Board (SERB), Govt. of India



Dr. Gulshan Sachdeva

Mechanical Engineering Department
Email : gulshansachdeva@nitkkr.ac.in

The objective of the project is to enhance the performance of vapor compression system of small capacity with the use of ejector as an expansion device. To do this, ejector will be designed for the required performance by using the existing thermodynamic models developed by the various researchers. Engineering Equation Solver will be used to design the system. After getting it manufactured as per the designed geometry, the experimental set up will be fabricated in such a way so that it can run on any expansion device whether ejector or conventional capillary tube so that the comparison of the performance can be made with the conventional vapor compression system. Multi evaporator system will also be designed and fabricated.

Development of Ultrasonic Assisted Electrochemical Mechanical Finishing (UAECMF) Process with Modular Tooling System for Precision Finishing of Gears.

Sponsor: Science and Engineering Research Board (SERB), Govt. of India



Dr. Joy Prakash Misra

Department of Mechanical Engineering

Email : jpmisra@nitkkr.ac.in

ECMF is an emerging process for precision finishing of internal cylinders and gears. This project proposal focuses on the development of Ultrasonic Assisted Electrochemical Mechanical Finishing (UAECMF) of gears with modular tooling system. With the assistance of modular tooling system, the proposed machine setup can provide the versatility of running mechanical finishing, ECM, ultrasonic assisted mechanical finishing, ultrasonic assisted ECM, UAECMF process in a single setup and can incorporate different sizes of gears with minimum setup changeover. As this unique technique is capable enough to provide high productivity while satisfying accuracy requirements, it can help gear-manufacturing industries in a big way in India. The experimental investigations will be carried out in three stages: (i) design and development of indigenous machine setup for UAECMF with modular tooling system; (ii) experimental studies and process parameter optimization to explore the effects of process parameters on precision finishing of gears; and (iii) development of an intelligent advisory system for UAECMF of gears by integrating experimental and analytical knowledge into system with user-friendly interface.

Data Fusion Algorithms for Vehicle Detection and Classification System

Sponsor: CARS-Terminal Ballistics Research Laboratory, DRDO, Chandigarh



Dr. Vikas Mittal (PI)

Department of Electronics & Communication Engineering

Email : vikas_mittal@nitkk.ac.in

Dr. Monika Mittal (Co-PI)

Department of Electrical Engineering

Email : monika_mittal@nitkkr.ac.in



Multi-sensor fusion finds applications in many fields such as remote sensing, biomedical, automation industry, aerospace, robotics etc. in addition to applications such as vehicle classification and segmentation that is considered in this project. In vehicle classification and segmentation, observational data may generally be collected using three types of sensors viz. infrared (IR), seismic and acoustic sensors individually. The three sensors provide observations on different physical parameters and, hence, are not sufficient, when used individually. There could be different approaches in achieving this: Data fusion, Image fusion (pixel-, feature- and decision levels), information fusion and knowledge fusion. Deliverables in the project are design, development, simulation and validation of an appropriate algorithm/methodology using a suitable high level IDE such as MATLAB.

Modeling and Simulation of Explosive-Driven Helical Flux Compression Generator.

Sponsor: Terminal Ballistics Research Laboratory, DRDO, Chandigarh



Dr. Saurabh Chanana

Department of Electrical Engineering

Email : saurabh@nitkkr.ac.in

It is of special interest to use a Helical Flux Compression Generator (HFCG) together with a pulse-forming network to provide a high voltage pulse for the generation of high-power microwaves. HFCG usually consists of a conducting cylindrical coil (stator) and a conducting cylindrical tube (armature) filled with high explosives. The HFCG is a very complex component to model, considering the various losses that are present in the generator. Efforts to model the physical phenomenon and processes of

HFCGs can be classified in two most prominent approaches. One of them is to model the equivalent circuit of HFCG and the other is magnetohydrodynamic (MHD) model. However, it is important to note that all HFCG codes rely on at least one heuristic factor. Hence, the simulated performance of HFCG of a radically new design can be quite a bit different. These codes work best for limited changes from baseline design where the code has been verified against the experimental data. In light of these facts, the project will have following objectives.

Partition Recovery of Wireless Sensor Networks with the Integration of Unmanned Aerial Vehicles (UAVs)

Sponsor: Science and Engineering Research Board (SERB), Govt. of India



Dr. Virender Ranga

Department of Computer Engineering

Email : virender.ranga@nitkkr.ac.in

The problem of network partition in WSN received attention in the last few years. Several different approaches have been presented to handle this problem of WSN disconnections. The integration of Unmanned Aerial Vehicles (UAVs) with fixed sensor nodes is a now new concept proposed by researchers recently called Fly Ad-hoc Networks (FANETs). It is being proposed for military surveillance and monitoring of the areas where the human beings cannot reach. It is also called the

extension of MANET /VANET or sensor networks. It works in those areas where MANET/ VANET or traditional sensor nodes cannot reach. Many researchers are doing work in this research area with ground-to-ground recovery procedure, i.e. recovery of partitioned network with mobile sensors/actors or with deployment of relay nodes. Limited focus has been made in using hybrid solutions for network partition recovery. In view of the above, the main objectives of this research project are: 1. To explore the use of UAV swarms with sensor networks, 2. To develop new fault tolerant solutions, 3. To investigate the proposed solutions in real life applications.

Development of Novel Electrode Material for Supercapacitor Applications

Sponsor: Science and Engineering Research Board (SERB), Govt. of India



Dr. Prakash Chand

Department of Physics

Email : prakash@nitkkr.ac.in

Supercapacitors play a vital role in accompanying batteries or fuel cells in their energy storage function by providing backup power supplies to protect against power interruptions. The performance of supercapacitors is intimately related to the electrode materials. However, the development of cutting-edge electrode materials is still a challenging research area and endeavors to improve the energy and power densities of supercapacitors to cover the increasing demands for energy storage devices. The research will be focused on the development and fabrication of novel electrode material for supercapacitor application via optimizing the experimental synthesis conditions of selected metal, transition metal and rare earth elements doped metal oxides (MnO_2 , Fe_2O_3) and metal phosphates ($BiPO_4$) with improved energy/power density and long-cycle life.

Design and Development of a Hybrid Powered Liquid Desiccant System for Air Conditioning and Fresh Water Production

Sponsor: Science and Engineering Research Board (SERB), Govt. of India



Dr. Rajneesh

Department of Mechanical Engineering

Email : rajneesh@nitkkr.ac.in

In the project, a hybrid solar/biogas powered liquid desiccant cooling system will be used for fresh water production and human comfort. The proposed system will be designed and developed to withstand the latent as well as the sensible load required in air conditioning. The effectiveness of regenerator and condenser to produce drinking water will also be analysed. This technology also improves indoor air quality as the desiccant material used is anti-bacterial and helps to keep the moulds and air ducts bacteria free. Overall, this system can be considered as the effective tool of satisfying the energy necessities in the developing countries.

Physics Based Accurate Analytical Modeling of AlGaN/GaN High Electron Mobility Transistors.

Sponsor: Solid State Physics Laboratory, DRDO, New Delhi



Dr. Ashutosh Nandi

Department of Electronics and Communication Engineering

Email : ashutoshfec@nitkkr.ac.in

III-nitride wide band-gap semiconductor e.g. GaN, enjoys several attractive physical properties that are of paramount importance for AlGaN/GaN based high electron mobility transistors (HEMTs) in high frequency and high power applications. Compact models such as: threshold voltage based model, surface potential based model and charge based model are frequently used to characterize the AlGaN/GaN based HEMTs. For accurate calculation of channel charge density, a complete 2-D solution of Poisson's equation is proposed. Green's function approach using a multizone technique

and mixed boundary conditions are proposed to accurately predict the electric field of different regions. The continuity of electric displacement at hetero junction can be used to replace the earlier 1-D charge density and electron energy states expressions to target accurate charge density and fermi energy level, by self consistent solution of Schrodinger's and Poisson's equation in the quantum well.

POST DOCTORAL FELLOWSHIP AWARD

Mathematical Modeling for Bio-Fluid Transport in Arterial Geometries for Drug Delivery Applications

Sponsor: Science and Engineering Research Board (SERB), Govt. of India



Dr. Paras Ram

Mentor/ Principal Investigator

Department of Mathematics

Email : parasram123@@nitkkr.ac.in

Dr. Shashi Sharma

Post Doctoral Fellow

Department of Mathematics

Email : shashisharma1984@gmail.com



In this proposal, Mathematical model will be developed to study various flow parameters (e.g. pressure, velocity, flow rate etc.) of peristaltic motion of bio-fluid in elastic tube/channel (as a simulated blood vessel) with or without magnetic field. This is fundamentally an applied mathematics proposal. Nevertheless, it has to address the applied and multidisciplinary nature of the field. From the Mathematics point of view, it has to treat differential problems of different kind: Navier-Stokes equations (coupled with structural models) for the flow in main blood vessels, non-linear one-dimensional hyperbolic equations for pulse wave propagation along the arterial tree, and, finally, systems of differential-algebraic equations for the systemic behavior and auto-regulation mechanisms. Special numerical techniques will be implemented for this purpose. The governing coupled non-linear PDEs will be solved analytically as well numerically using Finite Element (FEM) and Finite Volume method (FVM). Some mathematical software (e.g. MATLAB and MATHEMATICA) will be used for computational work.

Development of Energy Storage Cell using Agricultural Waste Sugarcane Bagasse



Dr. Anurag Gaur

Department of Physics

Email: anuragdph@nitkkr.ac.in

Dr. Anurag Gaur developed an energy storage coin cell of 20 mm diameter with 1.5 V using agricultural waste Sugarcane Bagasse. Sugarcane Bagasse (SB) wastes is very cheap and easily available in our region, which are potential raw materials for the preparation of porous carbons with good electrochemical performance. The agriculture wastes (SB) are converted into activated carbon by thermal processes to produce a strong porous structure with enlarged surface area. This obtained porous carbon material having specific capacitance (265 F/g) at 0.2A/g is used as one electrode and Lithium as second electrode for energy storage cell. The utilization of agricultural waste for energy storage will help not only to achieve rural development but also to find the diversified sources of energy for improving the energy security of the country.

Colorimetric sensor for the detection of moisture in organic solvents and application in inkless writing



Dr. Amilan Jose D

Department of Chemistry

Email: amilanjoselit@nitkkr.ac.in

Dr. Amilan Jose research group developed colorimetric sensors based on Sudan- III (1) and Alizarin Red S (2) for the detection of a trace amount of water in organic solvents such as THF, acetone, acetonitrile and DMSO. The deprotonated (anionic) forms of 1 and 2 such as 1.F and 2.F are re-protonated by using a trace amount of water. Test papers of 1.F and 2.F in organic solvents with and without moisture showed dramatic changes in color. Receptor 1.F exhibits high sensitivity for water in acetone and THF with the detection limit as low as 0.0042 and 0.0058 wt %. Remarkably probes 1.F and 2.F are reversible in nature both in solution and test stripes. 1.F and 2.F are reversible and reusable for sensing moisture in the organic solvents with high selectivity, high sensitivity, and fast response. The reversible moisture sensor 1.F has also been used for the application in ink-less writing in paper.

This work has been published in ACS Appl. Mater. Interfaces, 2017, 9, 25600–25605 (Impact factor 7.504)

Smart Accident Prevention System- an innovative solution to avoid road accidents in India



TECHgium is an open-innovation initiative on behalf of L&T Technology Services Limited to provide a platform for the nation's most-talented engineering graduates to solve real-world engineering problems. TECHgium provides a platform to search Imagineers among Engineers.

A team from NIT Kurukshetra consisting of Mukesh Agrawal, Akshay Verma, and Arun Teja from Electrical Engineering, Computer Engineering, and Electronics & Communication Engineering Department respectively earned the position in the selected top ideas among 1100 concepts.

"Smart Accident Prevention System" identifies reckless driving, thread depth and tailgating. The system detects driver's behavior, the tread depth measurement techniques and Anti - Tailgating device comprising of Lidar and speed sensor.

Farm Malasiya Programme

Ashish Aggarwal pursuing his Masters in Business Administration from NIT Kurukshetra has been selected to represent NIT Kurukshetra in "International Youth Goes to Farm Malaysia Program" to be held in September 2018 in Selangor Malaysia. The programme offers him visit to the company, university and agriculture farms to get training and workshop thereon. There will be 30 participants from around the world who will be coming together to compete in the prestigious competitive event.



GLOBAL INITIATIVE OF ACADEMIC NETWORKS (GIAN) COURSES

1 Course Name : **SECURE INFORMATION TECHNOLOGY**
Course Area : Mathematical & Computer Sciences
Foreign Faculty : Atef Shalan, United States of America
Host Faculty : Dr. Sarika Jain, Department of Computer Applications
Duration : 18-12-2017 to 23-12-2017

2 Course Name : **ADVANCED NUMERICAL METHODS FOR SOLVING STURM-LIOUVILLE PROBLEMS**
Course Area : Mathematical & Computer Sciences
Foreign Faculty : Marnix Van Daele, , Belgium
Host Faculty : Dr. A. S. V. Ravi Kanth, Department of Mathematics
Duration : 24-01-2018 to 28-01-2018

3 Course Name : **NEXT GENERATION MIMO AND OFDM WIRELESS TECHNOLOGIES**
Course Area : Electronics, Electrical, Information & Communication Technology
Foreign Faculty : ChinthaTellambura, , Canada
Host Faculty : D. Arvind Kumar, Department of Electronics and Communication Engineering
Duration : 08-12-2017 to 17-12-2017

4 Course Name : **THE INTERNET OF THINGS FOR A CONNECTED WORLD**
Course Area : Electronics, Electrical, Information & Communication Technology
Foreign Faculty : San Murugesan, , Australia
Host Faculty : Dr Kapil, Department of Computer Applications
Duration : 02-12-2017 to 06-12-2017

5 Course Name : **INTRODUCTION TO MATHEMATICAL THEORY OF COMPLEX FLUIDS**
Course Area : Mathematical & Computer Sciences
Foreign Faculty : Ashwin Vaidya, , United States of America
Host Faculty : Dr. A. S. V. Ravi Kanth, Department of Mathematics
Duration : 17-11-2017 to 22-11-2017

6 Course Name : **SENSOR NETWORKS FOR CIVILIAN APPLICATIONS**
Course Area : Electronics, Electrical, Information & Communication Technology
Foreign Faculty : Dharma P Agrawal, , United States of America
Host Faculty : Dr. Brij Bhooshan Gupta, Department of Computer Engineering
Duration : 01-01-2018 to 07-01-2018

7 Course Name : **VIBRATIONAL SPECTROSCOPY AND THE MOLECULAR VIBRATIONS**
Course Area : Chemical, Bio-Chemical & Material Sciences
Foreign Faculty : Rui Fausto, , Portugal
Host Faculty : Dr. Chetti Prabhakar, Department of Chemistry
Duration : 15-01-2018 to 19-01-2018

CONFERENCES ORGANIZED

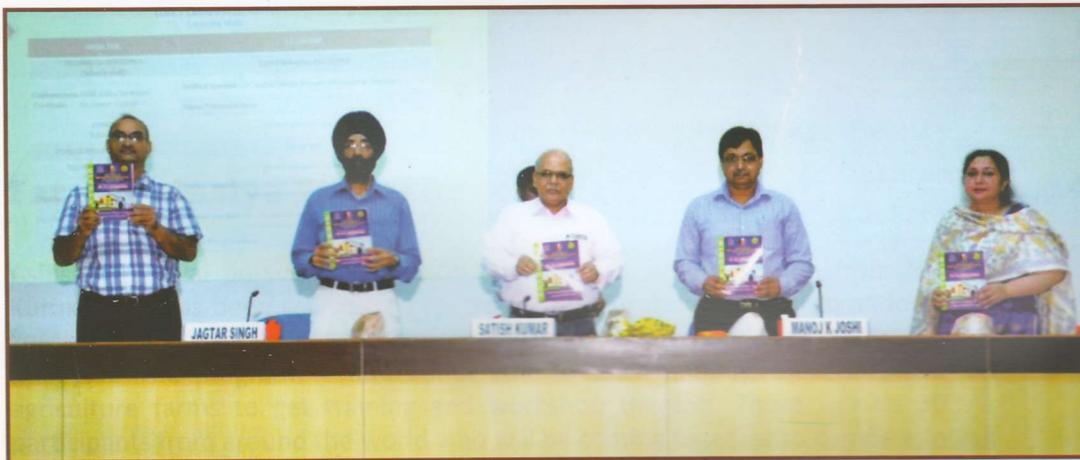
6th International Conference on Smart Computing and Communication

A two-day, "International conference on Smart Computing and Communication" was conducted by the Department of Computer Applications during 7-8 December, 2017. The conference was inaugurated with the presence of Hon'ble Director of the Institute along with Chief Guest San Murugesan Director of BRITE Professional Services, Sydney; adjunct professor at University of Western Sydney; and Guest of Honor Dr. Pramod Kumar Meher from Nanyang Technical University. The conference Chairperson Prof. Ashutosh Kumar Singh briefed the august gathering about the conference theme. Followed by, Guest of Honor had elaborated the concept of 'Smart' in general and computing in particular. In continuation, Patron of the conference Dr. Satish Kumar had discussed the evolution of technological developments in India. Chief Guest was honored by Hon'ble



Director of the institute. Finally the event ended with a formal vote of thanks from Professor Brahmjit Singh, Publication Chair of the conference and Dean (R&C) of the institute. Prof. Vijay K. Vaishnavi, Professor Emeritus, Department of Computer Information Systems, Georgia State University; Prof. Masahiro Fujita from University of Tokyo also delivered the talks.

National Conference on "Digital Revolution and Challenges for Libraries" (29th HLA National Conference) on the 29th Birth Anniversary of Dr. S R Ranganathan (12-13 August, 2017)



A two-day National Conference on "Digital Revolution and Challenges for Libraries" (29th HLA National Conference) at NIT Kurukshetra was inaugurated by the Hon'ble Director Dr. Satish Kumar. The program was started with opening welcome note by Dr. Krishan Gopal, organizing secretary and librarian of institute. In his welcome note he welcomed the chief guest, president of Haryana Library

Association, delegates, faculty, staff and others present in the function. Prof. Manoj Joshi, President of Haryana Library Association welcomed chief guest Hon'ble Director Dr. Satish Kumar, Prof. Jagtar Singh, Prof. Pratibha Agrawal, delegates, faculty, staffs and others present in the function. In his welcome address, he highlighted the immense and pioneering contribution made to the field of library science by Dr. S R Ranganathan. After the welcome address Prof. Jagtar Singh delivered his key note address wherein he highlighted the digital transformation and challenges for the modern library. In this occasion, a souvenir was released relating to the theme of conference by the chief guest and other dignitaries. Hon'ble director Dr. Satish Kumar felicitated Dr. Narendra Shokeen, former librarian of Kurukshetra University.

CONFERENCES ORGANIZED

Conference on Academia-Industry Interface (8-9 November, 2017)

A two-day Conference on Academia-Industry Interface held at the Senate hall of the Institute was initiated by Prof. Rajendra Deswal, Mentor, Department of Business Administration by enlightening the esteemed guests and the students with his vision for the department and the students. The Presidential address was given by Padma Shri Dr. Satish Kumar, Director NIT, Kurukshetra. He focused upon the integration of all stakeholder for better and cohesive development of the students. He shared his valuable experience of processes and systems shaped in DRDO through the integrated approach where developer, user and producer all are linked. The first speaker for the day was Professor V.K. Gupta, doctorate in Finance and a faculty of Finance at IIM Indore. He majorly focussed on Stakeholder Value Management, Customer Delight and a systemic process which involves customers, employees and shareholders satisfaction.



Second guest speaker was Mr. Atul Lal, a distinguished alumnus and a social entrepreneur talked about "Charting a Successful Career" where he focussed upon the kind of ATTITUDE and APTITUDE required to be successful in any career. Mr. Nikhil Mathur was the next speaker who is head HR (ECO-Rent a Car) and he talked about the various aspects that an HR manager looks while recruiting a human capital. He talked about the kind of expectations that organizations have from the next upcoming generation. The conference was organised by Dr. Neeraj Kaushik and Professor Rajendra Deswal.

RECENT PATENTS FILED

Sr. No.	Name of Inventor/Department	Title of the Invention	Patent Numbers
1.	Dr. Punit Kumar Mechanical Engg.	Design Registration of Wheel Chair	253848
2.	Dr. Lalit Thakur Mechanical Engg.	Self-Adjustable Gimble Shoulder Retractable Pin Friction Stir Welding Tool	201511042866
3.	Soon Hyeok Hong, Subhash Chandra Ghosh, Yao Zhang, Senthilkumar Muthaiah, Cheng Chen, Xiangya Xu ,Chemistry	Process of forming an amide	13/496,466
4.	Dr. Avadhesh Yadav Mechanical Engg.	Composite desiccant material for the production of fresh water from atmospheric air.	1566/DEL/2015
5.	Nikhil Marriwala, O. P. Sahu, Anil Vohra, Electronics & Communication Engineering	Wi-Fi based Transceiver Using LabVIEW for Software Defined Radio,	439/CHE/2015

MEMORANDUM OF UNDERSTANDING (MoU)

C-DAC Pune

A Memorandum of Understanding was signed on 8th November, 2017 between National Institute of Technology Kurukshetra and Centre for Development of Advanced Computing (C-DAC) Pune, the premier R&D organization of the Ministry of Electronics and Information Technology (MeitY) for carrying out R&D in IT, Electronics and associated areas. It aims to undertake R & D work in the areas of common interest including High Performance Computing and Deep Learning.

The MoU envisages to establish a centre of High Performance Computing through installation and deployment of Supercomputer in a Box Solution "PARAM Shavak" at NIT Kurukshetra.



Dr. B.R. Ambedkar NIT Jalandhar



National Institute of Technology Kurukshetra, signed a Memorandum of Understanding on 9th December, 2017 with Dr. B. R. Ambedkar National Institute of Technology Jalandhar to promote academic and research cooperation and developing as Centres of Excellence of higher and technical education. The MoU provides opportunity to exchange scientific and technical know-how for joint supervision of postgraduate and Ph.D. students, undertaking collaborative research activities through participation in national and internationally funded projects, joint organization of events such as seminars, workshops, conference, and training programs.

Ph.D. DEGREES AWARDED

Title of the Thesis	Name of Scholar	Supervisor/Co- Supervisor
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ELECTRICAL ENGINEERING DEPARTMENT

Development of Simple Techniques for Voltage Regulation and Power Oscillation Damping	Mr. Aman Ganesh	Prof. Ratna Dahiya, EED, NIT Kurukshetra Dr. G. K. Singh, EED, IIT Roorkee (Uttarakhand)
On Higher Order Sliding Mode and its Application to Motion Control	Mr. Ankur Goe	Prof. A. Swarup EED, NIT Kurukshetra
Design and Analysis of Triangular Microstrip Antenna	Mr. Prabal Pratap	Prof. R. S. Bhatia EED, NIT Kurukshetra Prof. Binod Kr. Kanaujia Ambedkar Inst. of Tech., Govt. of NCT Delhi
Maximizing the Power Generation of Solar Photovoltaic Arrays under Partial Shading Conditions	Ms. Smita Pareek	Prof. Ratna Dahiya EED, NIT Kurukshetra
Harmonic Mitigation of Induction Furnace	Mr. Arvind Dhingra	Prof. Ashwani Kumar EED, NIT Kurukshetra
Electric Power Quality Evaluation and Benchmarking of Electric Utilities	Mr. Lokendra Pal Singh	Prof. R. S. Bhatia EED, NIT Kurukshetra Prof. D. K. Jain EED, DCRUST, Murthal, (Haryana)
Condition Monitoring of Induction Motors	Mr. Rajul Kumar Misra	Prof. G. L. Pahuja EED, NIT Kurukshetra
Protection Issues of Grid Connected Distributed Generation	Mr. Pankaj Gupta	Prof. R. S. Bhatia EED, NIT Kurukshetra Prof. D. K. Jain EED, DCRUST, Murthal, (Haryana)
Ambiguity Tolerant Control Design for Robotic Manipulator Based on Intelligent Techniques	Ms. Neha Kapoor	Prof. Jyoti Ohri EED, NIT Kurukshetra
Stability, Reliability Analysis and Control Design for Time Delay Systems	Mr. RamaKoteswara Rao Alla	Prof. J. S. Lather EED, NIT Kurukshetra Prof. G. L. Pahuja EED, NIT Kurukshetra

ELECTRONICS & COMMUNICATION ENGINEERING DEPARTMENT

Synthesis and Characterization of Undoped/Doped TiO ₂ Films for the Measurement of Carbon Monoxide Gas Concentration	Mr. Mukesh Kumar	Prof. A. K. Gupta (Retd.) ECE, NIT Kurukshetra Prof. Dinesh Kumar Electronic Science Deptt., KUK
Simulation Studies on Spacer Engineered FinFETs for low Power Analog/RF and Digital Applications	Mr. Gaurav Saini	Dr. Sudhanshu Choudhary, ECE Department, NIT Kurukshetra

Ph.D. DEGREES AWARDED

Title of the Thesis	Name of Scholar	Supervisor/Co- Supervisor
Study of Spectrum Sensing Techniques for Cognitive Radio Systems	Mr. Pankaj Verma	Prof. Brahmjit Singh Electronics & Communication Engineering, NIT Kurukshetra
Improvements in Spectrum Sensing and Throughput for a Cognitive Radio System	Mr. Gaurav Verma	Prof. O. P Sahu Electronics & Communication Engineering, NIT Kurukshetra

MECHANICAL ENGINEERING DEPARTMENT

Green Supply Chain Management in Dairy and Agro Industry: A framework for Sustainable Development	Mr. Vijay Kumar	Prof. Pankaj Chandna MED, NIT Kurukshetra Prof. Arvind Bhardwaj NIT Jalandhar, Punjab
Thermo-Hydraulic Performance Enhancement of Solar Air Heater Using Multiple ArShaped Roughness Elements with Gaps on Absorber Plate	Mr. Navneet Kumar Pandey	Prof. V. K. Bajpai Mechanical Engineering, NIT Kurukshetra
Parabolic trough Collector – Analytical and Experimental Study Considering Various Designs and Operating Parameters	Mr. Devander Kumar	Prof. Sudhir Kumar (Retd.) Mechanical Engineering, NIT Kurukshetra
Numerical Studies on the Effects of Pressurized Ambient Condition, Accelerated Motion and Artificial Surface Features in EHL Contacts	Mr. Niraj Kumar	Dr. Punit Kumar Mechanical Engineering, NIT Kurukshetra

CIVIL ENGINEERING DEPARTMENT

Seismic Response of Braced and Shear Wall R.C.C. Framed Buildings.	Mr. Ravinder Singh Malik	Prof. V. K. Sehgal Civil Engineering, NIT Kurukshetra Prof. S. K. Madan Civil Engineering, NIT Kurukshetra
Study of Properties of Cementitious Compositions Incorporating Nano-Silica	Mr. Rahul Pratap Singh	Prof. Pratibha Aggarwal Civil Engineering, NIT Kurukshetra

COMPUTER ENGINEERING DEPARTMENT

Improved Software Remodularization through Search-Based Techniques	Mr. Amarjeet	Prof. Jitender Kr. Chhabra Computer Engg., NIT Kurukshetra
Design and Development of Defensive Solutions for Web Applications against Cross - Site Scripting (XSS) Attacks	Mr. Shashank Gupta	Dr. B. B. Gupta Computer Engineering NIT Kurukshetra

PHYSICS DEPARTMENT

Acoustic Emission Analysis for Damage Response of Snow and Characterization of Acoustical Properties	Mr. Prem Datt	Prof. Ashavani Kumar Physics, NIT Kurukshetra Dr. J.C. Kapil, Scientist-E SASE, DRDO, Chandigarh
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• INNOVATION CLUB •

Following projects are under progress in this club :-

1. Design and Fabrication of an efficient Vivaldi Antenna for Ultra-Wide Band (UWB) Applications

Pratul Nijhawan, Arvind Kumar and Yashash Chandra Dwivedi

2. Automatic Number Plate Recognition System

Bhupesh Gaugna, Disha Rewri, Vaishali Garg, Swati Goel, Arun Teja

3. Autonomous Pool Cleaning Robot

Mansi Agrawal, Vaishnavi Rane, N.Lalitha Gayathri, Vaishnavi Adurti

4. Search & Rescue VTOL Aircraft

Anuj Gupta, Nishant Kumar and Umang Agarwal

5. VEGAM Variable Vehicle Speed Limiter

T.Lokesh, A.R.Phani Kumar, K.Deva Kishore



TEAM INNOVATION ➔

FACULTY COORDINATORS Research & Consultancy



Dr. Saurabh Chanana

Electrical
Engineering



Dr. Arvind Kumar

Electronics &
Communication Engineering



Dr. Anurag Gaur

Physics



Dr. Avdhesh Yadav

Mechanical
Engineering



Dr. Mantosh Biswas

Computer
Engineering

Issue Editor : Dr. Anurag Gaur

Address for Correspondence

DEAN, RESEARCH & CONSULTANCY

NATIONAL INSTITUTE OF TECHNOLOGY

KURUKSHETRA-136119 (Haryana)

Tel: +91-01744-233221 | Email: brahmjit@nitkkr.ac.in

www.nitkkr.ac.in