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FUTURE EVENTS

- ❖ National Conference on Sustainable Civil Engineering Practices: March 18-19, 2016
- ❖ Global Engineering Week: March 28-31, 2016

EDITORIAL BOARD

- ❖ Dr. Sudhir Mahajan, Dean R & D (Chairman)
- ❖ Mr. Sagar Juneja, ECE (Member Secretary)
- ❖ Dr. Neha Kishore, CSE (Member)
- ❖ Dr. C Prakasam, CE (Member)
- ❖ Dr. Sushil Kumar, Applied Sciences (Member)

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EDITORIAL

Why Research...

The rapid growth of scientific knowledge is viewed by some in the community as an indication that we have traversed all that needs to be discovered. However the application and impact of academic research on our daily lives continues to accelerate. The truth is that we can't stop imagining what the world will be like in two to three decades. What we know, it will be fundamentally different from present due to advancement in science, technology and innovation being carried out in the research environment.

We may describe obvious research benefits which are attributed to type of research. For instance, benefits of a social type (additional knowledge of interest to policy makers), of an economic type (a new product or technology), of an environmental type (improved methods and techniques for sustainable food production) or of a health type (better means of providing health services based on better understanding of the medical conditions).

For some type of research, the benefits may not be so obvious. In this context Albert Einstein, the great scientist, once remarked "if we knew what it was we were doing, it would not be called research, would it?" It is this research which lays foundation for knowledge that stimulates further innovation and application leading to diverse benefits. There is always a major element of chance factor in research. We need to accept that for every successful link between research and application, many projects may not succeed in the same manner. But such research definitely enriches global knowledge pool and acts as facilitator for new methods, techniques and innovations over a wide range of disciplines.

Focus on social, economic, health and environmental impacts of research has increased immensely. Applied research is bound to attract funding agencies to invest on research as economy is very strongly based on new technology and innovation. Research is not only vital to the social and economic development of society, it is equally vital to the mission of a university. As we proceed ahead, we can explore vast range of research and development opportunities to realize the vision of Chitkara University.

Chitkara University Himachal Pradesh, established in September, 2008 has made significant progress in research and related development activities. Recently four Research Centers namely 'Geoinformatics and Building Technology Research Centre' (GBTRC), 'Research Centre for Advances in Computer Science' (RCACS), 'Microelectronics and Information Science Research Center (MISRC)' and 'Research Centre for Physical and Mathematical Sciences' (RCPMS)' have been established in the University under Chitkara University Research and Innovation Network (CURIN) to provide focused direction to our research and development initiatives through faculty engagement. Faculty participation is evident from numbers of projects awarded, papers published, patents filed, paper presentation in seminars/conference, workshops organized etc. by them. To acknowledge our efforts, share knowledge with peers and to create a repository, it has been decided to release 'R n D News' a periodic Newsletter of Chitkara University Himachal Pradesh.

To start this endeavor, we are pleased to release the **Inaugural Issue** of 'R n D News' covering Research and Development activities for the period July 1, 2015 to December 31, 2015. Thereafter regular issues will be published. We will be more than happy to receive any suggestion/idea for improving the contents in future as we move forward.

Dr. Sudhir Mahajan

Dean, Research and Development
Chitkara University, Himachal Pradesh



TOP STORIES

Earthship constructed by Students of Civil Engineering Department

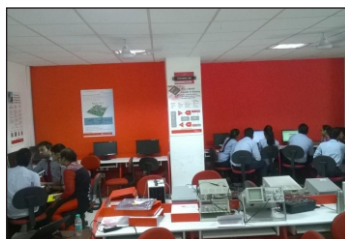
Earthship is an economical, sustainable and eco-friendly infrastructure built mostly using recyclable material like rubber, bottles, plastic etc. The structure is eco-friendly in a way that it uses Earth's natural renewable resources for its utility like Sun to keep the structure warm, Rain for water using rain water harvesting and use plants to treat their sewage. These structures heat and cool themselves on their own. Students of CE department built Earthship in the university campus in collaboration with ACC cement and with an expense of INR1.5 lacs. The structure is built using waste car tyres, glass bottles and some other recyclable material. Prof. Abhishek Kanoung was the coordinator of the project.

Earthships have evolved over the last thirty years from the pioneering work of Michael Reynolds, EarthshipBiotecture and the residents of the 3 Earthship communities in Taos, New Mexico.



Industry Sponsored Lab Set-up in Electronics & Communication (ECE) Department

Texas Instruments (TI) one of the leading semiconductor companies has set-up, under TI India University Program, TI Innovation Lab in ECE Department of Chitkara University (H.P.). The lab is centered around ASLK Pro Kits from Texas Instruments and the aim of the lab is to teach students concepts of Analog System Design with ease.



ASLK kits come with Analog Systems Lab Manual that covers more than 10 experiments on Analog System Design and over 15 exercises all of which can be easily build using ASLK Pro Kits. Analog Systems like Instrumentation Amplifier Design, Filter Design, Voltage Controller Oscillator, Phase Locked Loop, Automatic Gain Control (AGC) systems are covered in the Analog Course suggested by Texas Instruments.

To get us started, TI India University Program organized a two-day faculty development program on Analog System Design during Aug 21-22, 2015. Trainer was an expert from Texas Instruments – Mr. Narendra Babu. The program was open to faculty members of all engineering institutions and was conducted by Chitkara University, H.P.

Subsequently, TI India University Program conducted an exclusive contest on Analog Design called Texas Instruments Analog Campaign 2015 for 2nd year and 3rd year ECE students. Total 140 students participated in the contest in teams and top two



teams were awarded TI Chronos watches sponsored by Texas Instruments. 120 students of third year ECE took a lab course on Analog Design in Texas Instruments Innovation Lab in 5th semester.

Government of India Sponsored 21-day program on Geospatial Technologies

Govt. of India, NRDMS and Department of Science & Technology (DST) sponsored INR 10,00,000 for a 21-day Summer School Program on Geospatial Technology conducted by Geo-informatics and Building Technology Research Centre, Department of Civil Engineering, Chitkara University, Himachal Pradesh during July 21-Aug10, 2015.



The program was based around Remote Sensing & Geographic Information System (GIS) and was attended by twenty five national level participants carefully selected based on their applications from engineering institutions and university across India. The program was coordinated by Dr C. Prakasam, Professor CE Department.

Participants of the program posing for a group photograph with Dr. Madhu Chitkara – Pro Chancellor and Brig. (Dr.) R.S. Grewal – Vice Chancellor Chitkara University Himachal Pradesh in the centre.



Project Proposals Submitted to DST & DEITY

Computer Science Department (CSE) of Chitkara University, Himachal Pradesh has submitted 7 research projects to DST (Department Of Science & Technology) and DEITY (Department of Electronics & Information Technology) worth INR 85 lacs and Civil Engineering (CE) department has submitted a project worth INR37 lacs to DST. The details are as follows:-

- Design A Heterogeneous Mpsoc (Multiprocessor System On A Chip) System With A New Replacement Policy And Low Energy Consumption For Specialized Embedded System Applications submitted by Dr. Shaily Jain with an estimate budget of INR14.47 lacs.
- Study The Effect Of Parallel Hashing Algorithm And Digital Footprints For Security And Forensic Applications submitted by Dr. Neha Kishore with an estimated budget of INR14.87 lacs.
- Design And Development Of Parallel Algorithms For PKC Based Security Algorithm For Battery Operated Mobile Device submitted by Dr. Sapna Saxena with an estimated budget of INR14.76 lacs.



- Design And Development Of Biomedical Devices By Using Different Technologies (Embedded System) submitted by Dr. Tanu Sharma with an estimated budget of INR15 lacs.
- An Energy Efficient Parallel Security Algorithms For Mobile And Hand Held Devices submitted by Dr. Disha Handa with an estimate of INR15.70 lacs.
- Smart Vehicle Driver Remote Monitoring & Skill Assessment Apparatus submitted by Mr. Karan Bajaj with an estimate of INR 6.70 lacs
- Enhanced Rural Education Pedagogy Using Touch Sense Based Smart Projector submitted by Mr. Manik Gupta with an estimate of INR 4.60 lacs
- Water Resource Planning And Management For Water Stressed And Drought Prone Areas: A Geoengineering Model Case Study Of Una District, Himachal Pradesh, India submitted by Dr. C Prakasam to DST, New Delhi (under SwarnaJayanti Fellowships 2014-15 scheme) with an estimate budget of INR37,48,322.

ECE students of Chitkara University H.P. turn entrepreneurs @Chitkara Mandi

Chitkara Business School organizes Chitkara Mandi every year during Oct-Nov at Paras Downtown Zirakpur where MBA students are evaluated for their Sales & Marketing Skills. From last couple of years ECE department of Chitkara University



Himachal Pradesh is also taking part in the event where ECE students demonstrate, promote and sell their low cost, innovative electronic products designed by them in university labs.

Last year Chitkara Mandi was held during November 6-7 and around 20 ECE students participated with 4 electronic products all designed, developed and manufactured in university labs. Schematic and PCB layout design of electronic circuits was carried out using Proteus PCB designing tool. PCBs were manufactured in-house using copper clad boards etched using Ferric Chloride followed by assembly of components. Once the electronics was ready, the circuits were beautifully packaged inside aesthetically designed casings by the students.

The products designed by students were:

Mbox - MBox was a portable music box which contained an audio amplifier circuit and an inbuilt speaker.

3D Floral Lamp – This product was designed keeping festival in mind. The lamp contained LEDs and timing circuit that gives the fading effect.

Automatic Lamp – An LED Lamp that turns-on automatically during evening and turns-off during morning.

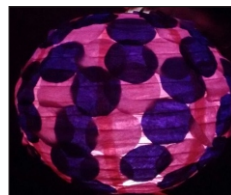
LED Cube – This product is based on microcontroller. It uses ATMEGA328 8-bit microcontroller from ATMEL which is programmed to give 18 different set of patterns in 4×4×4 LED cube matrix.



Mbox



3D Floral
Lamp



Automatic
Lamp



LED Cube

EVENT ORGANIZED

Faculty Development Program on Build your Own Smart Phone using Raspberry Pi

ECE department of Chitkara University, H.P. conducted the two-day faculty development program on Build your Own Smartphone using Raspberry Pi organized in collaboration with Computer Society of India Chandigarh Chapter and with industry support from Element14, Bangalore during July 25-26, 2015. Total 30 faculties from Chitkara University and four other neighboring engineering institutions attended the program.

Trainer for the workshop was Dr. SRN Reddy - HOD CSE, Indira Gandhi Delhi Technological University for Women, New Delhi (He is an expert in the area of mobile architecture & computing and is handling many industry sponsored projects). Dr. SRN Reddy Demonstrating the Smart Phone Kit in the photograph.

Raspberry Pi is a credit card sized computer that can do everything a normal PC can do. User just need to power it with microUSB adaptor, connect it to any display using HDMI or



VGA interface, keyboard and a mouse and insert an microSD card containing OS (Linux operating system). Raspberry Pi features ARM7 Quad-core processor, with GPU operating at 1Ghz, 1GB RAM, 40GPIOs for sensor interfacing, 4 USB ports, various communications protocols, microSD card slot, camera and TFT display interfacing options. In this program participants learned mobile architecture, sensor interfacing (all the sensors that are present in any smartphone) and programming using Python.

CE department conducted expert lectures during July-Dec 2015 on latest technology areas in civil engineering and invited experts of repute from leading academic institutions and industries

Sep 11, 2015

Brig. (Dr.) B Nagarajan from Geoinformatics Lab, Department of Civil Engineering, IIT Kanpur delivered a special lecture on Geodesy and Its Application of Civil Engineering. The session was attended by all undergraduate students and faculty of CE.





Sep 14, 2015

Maj Gen AK Chaturvedi, (Retd) delivered an expert lecture on Green Building Concept. The session was attended by all undergraduate students and faculty of CE.



Sep 29, 2015

Prof. S.K Aggarwal (Retd), IIT Roorkee delivered a guest lecture on Basics of Structural Analysis and Design for students of Civil Engineering.



October 15, 2015

Mr. Narinder Sharma, Chief Engineer (Retd) Bhakra & Beas Dams delivered a session on Construction of Dams - Methodology and Technology. The session was attended by all undergraduate students and faculty of CE.



Nov 3, 2015

Prof. Gurmel Singh from University of Birmingham delivered a guest lecture on Marginal Materials, Ground Improvement and Railway Track Foundations. All the Civil Engineering students and teachers attended the lecture.



Nov 27, 2015

ACC cement organised a special session on Sustainable Construction & Hands-on training of Concrete Mix Design for Civil Engineering Students.



Two-day faculty development program on Analog System Design by Texas Instruments India

ECE Department Chitkara University, Himachal Pradesh has set-up a "Texas Instruments (TI) Innovation Lab" based on ASLK Pro Kits during June 2015 and conducted a two-day faculty development program on Analog System Design in collaboration with Texas Instruments India University Program during Aug 21-22. The program was organized under MISRC (Microelectronics and Information Systems Research Centre), CURIN (Chitkara University Research & Innovation Network) and was opened to faculty and research scholars of all engineering institutions. 25 faculties and research scholars from 5 different engineering institutions signed up for the program. Trainer was an expert from TI India university program team and participants learnt to build analog systems like Amplifiers, Multivibrators, Filters, Automatic Gain Control System, Voltage Controlled Oscillator, Phase Locked Loop etc using ASLK Pro Kits.



Participants posing for a group photograph and receiving participation certificate from Brig. (Dr.) R.S. Grewal - Vice Chancellor, Chitkara University, H.P.

Hands-on workshop for ECE faculty on Beaglebone Black by Prof. Dr. Mark Yoder from Rose-Hulman Institute of Technology, USA

Beaglebone Black (BBB) is a fascinating low cost, open source, community supported development platform that let us develop interesting embedded applications with ease. It is powered with Texas Instruments AM3358 32-bit ARM microprocessor and it runs linux, android and couple of other operating systems. It is a tiny computer (tiny in size not in capabilities) that can be used for developing multimedia applications, it can be used for input output programming by connecting external peripherals for building embedded applications. You can use internet on it as it comes with an Ethernet port. You have a USB host and a USB client on it as well.



On Oct 10, 2015 Prof. Dr. Mark Yoder from Rose-Hulman Institute of Technology, USA visited ECE department of Chitkara University H.P. and conducted hands-on workshop on Beaglebone Black in Texas Instruments Lab in our campus. Prof. Yoder is an expert in the area of embedded processing and he has been conducting various workshops on beagle family (beagleboard, beaglebone, beaglebone black) in association with Texas Instruments.



Bentley Systems & Innovative Systel conducted a workshop for Civil Engineering Department

Civil Engineering Department of Chitkara University H.P. in collaboration with Bentley Systems and Innovative Systel conducted a workshop on Water and Waste Water Products and hands-on training on WaterGEMS software on Nov 27, 2015 in the university campus. WaterGEMS provides a comprehensive yet easy-to-use decision-support tool for water distribution networks. The software helps improve the knowledge on how infrastructure behaves as a system, how it reacts to operational strategies, and how it should grow as population and demand increase. From fire flow and water quality simulations, to criticality and energy cost analysis WaterGEMS has everything you need in a flexible multi-platform environment. 25 students and eight faculty members participated in the training program.



EVENT ATTENDED

Faculty Members of CE Department attended a workshop at AKC

Mr. Rahul Khurana, Ms. Dipali Sharma and Ms. Monika Sharma, faculty members of Civil Engineering Department attended a workshop on Earthquake Resistant Structures at Ambuja Knowledge Center (AKC) on 22 September 2015. The workshop covered in-depth details about earthquake resistant practices through presentations, videos, animations, exercises etc. There were around 50 participants from industry and academic institutions.



CE Faculty attended a course on UAV Remote Sensing Applications organized by ISRO

With the availability and development of multi-sensor, multi-temporal, multi-resolution, and multi-frequency image data from operational Earth observation satellites more limitations have appeared in remote sensing applications. To overcome the limitations, unmanned aerial vehicle (UAV) technology is developed for remote sensing applications. It forms a rapidly developing area of research in remote sensing. Objective of the course was to create awareness among professionals, academicians and government on UAV technology of remote sensing data and its applications.

Dr. C. Prakasam faculty member of Civil Engineering department attended a course on UAV Remote Sensing Applications organized by Indian Institute of Remote Sensing, ISRO, Dehradun during 5-9 October, 2015. The course was a blend of lectures and demonstrations on fundamental of UAV remote sensing, challenges in data acquisition and processing, potential advantages of UAV data in natural resource management and disaster management.



It was one of the first UAV courses organized in India, there were 22 participants from different parts of the country and this course included lectures and software training on UAV applications in different field of civil and allied engineering.

Faculty and students of ECE department participated in a Seminar on Fibre Optics organized by IETE

IETE (Institute of Electronics and Telecommunications Engineering) organized a seminar on its foundation day November 2, 2015 at their Chandigarh headquarters in which students and faculty of ECE department of Chitkara University H.P. participated. Students from many engineering colleges/universities participated in the event. Dr. R.K. Sinha – Director CSIO Chandigarh was the honorable chief guest on the occasion and he delivered a lecture on “Fibre Optics and its applications”. In the afternoon session there was a discussion on Digitization and Make in India initiatives in which students enthusiastically participated. The last activity was



General Technical Quiz (GTQ) in which student teams from all colleges (each team comprising of 10 students) participated and our team of ECE students of Chitkara University H.P. stood second in the Quiz.

Faculty & student from CE department attended Bentley Learning Conference 2015 during November 24-25, 2015 held at New Delhi

Mr. Abhishek Kanoungo faculty member Civil Engineering (CE) & Shivam Aggarwal student CE department attended Bentley Learning Conference 2015 during November 24-25, 2015 organized by Bentley Systems at Hotel Suryaa, New Delhi. Experts from industry conducted sessions on latest technology updates on “Structure” and “Hydraulics & Hydrology”. They showcased live demonstrations and discussed innovations that will help students to understand the technology.

There were keynote speeches by industry experts on recent trends in Water Technologies and Water Technology softwares like Sewer Gems and Water Gems. While Water Gem is an excellent software for designing and testing the water supply system for metropolitan cities as well as industries, Sewergems is a good software for designing sewer networks efficiently. Second day of the conference was dedicated to another excellent software from the suit of Bentley Systems named “Staad.pro”. Staad.pro is amazing software for structure designing and application problems. There were presentations that gave detailed overview of the software.



Faculty Members & Students of CSE department participated in 50th Golden Jubilee Annual Convention of CSI at New Delhi

Computer Society of India organized 50th Golden Jubilee Annual Convention during Dec 2-5, 2015 in New Delhi. The theme of the conference was Digital Life and featured 500+ paper presentations in 10 parallel tracks. 3 faculty and 5 students of Computer Science department Chitkara University, H.P. attended the convention and presented their research work covering the topics like Implementation of Hadoop, Finite State Automata Theory etc. Through participation in the convention students explored and learned topics like Analysis of Decision Tree Algorithm, Routing Protocols used for implementing MANET Networks, Code that is used to generate Deterministic Finite Automata equivalent to Non- Deterministic Finite Automata for Type-3 languages that are regular languages, Big Data Problems and WBAN: Solution to Battery Life.





PATENTS

Patents filed during July-December 2015 by students and faculty of Chitkara University Himachal Pradesh

Automatically Adjustable Laptop Stand by Dr. Neha Kishore & Vivek Khanna

Summary - An automatic adjustable laptop/desktop stand enables the screen to move up/down and horizontally depending upon the posture of user no matter if the user is standing or sitting. A face recognition sensor is fixed on the top of the screen that measures the distance and angle to user's eye.

Patent Filing# - 2397/DEL/2015

Driverless Car by Anirudh Gupta

Summary - An automatic driverless car with an open system for Indian road and whether condition, comprising of RADAR (Radio Detection and Ranging) which transmits waves via optical fibers with camera, SONAR (Sound Navigation and Ranging), different sensors and photo diodes. Artificial Intelligence System is used to control the various input/output and other functionality of the car.

Patent Filing# - 3132/DEL/2015

Compact Touch Sensitive Projector by Manik Gupta, Karan Bajaj, Dr. Shaily Jain and Gaurav Mehta

Summary - A compact touch sensitive projector that works without computer features an inbuilt high definition camera for live recording. There is an additional hardware along with it which is light pen maker and an eraser.

Patent Filing# - 2727/DEL/2015

Wearable Suit With Air Conditioning System by Vinay Chadha

Summary - Wearable suit with air conditioning system to keep a person comfortable during excessively warm and cold environment conditions. It is energy efficient and uses light weight material so that it can be worn as an overcoat. It features a DC compressor that operates on DC battery and air conditioning hose to get conditioned air from the compressor.

Patent Filing# - 3131/DEL/2015

Mobile Back Panel With Safety Chip by Dr. Disha Handa Mahendru, Ayush Garg and Gaurav Goyal

Summary - A mobile back panel with safety chip to recognize distress voice and words like 'help', 'save me' etc and without human

interference send the location and mobile number of the victim to the nearest police station. The electronic system in a form of a chip is embedded on a back panel of the mobile and comprises of a microphone, speech sensor, GSM module, and a microcontroller.

Patent Filing# - 3543/DEL/2015

Combinational SIM Card Lock System For Mobile Phone by Aniket Bharadwaj, Hemani Negi, Abhijit Dey, and Nilesh Khanna

Summary - Mobile SIM (Subscriber Identity Module) card tray-lock system which can be useful in case of theft. If the mobile phone is stolen, the thief normally removes the SIM card and reset the phone. But in this invention mobile SIM card tray lock system is developed that will consists of an electronic motor and a gear. The hardware combination is controlled using software like pass code or pattern lock. As long as the SIM card is engaged in the mobile phone it will be impossible to reset the phone, such a system is developed.

Patent Filing# - 3523/DEL/2015

Device And System To Detect Future Emotional Behaviour Of Humans by Dr. Tanu Sharma

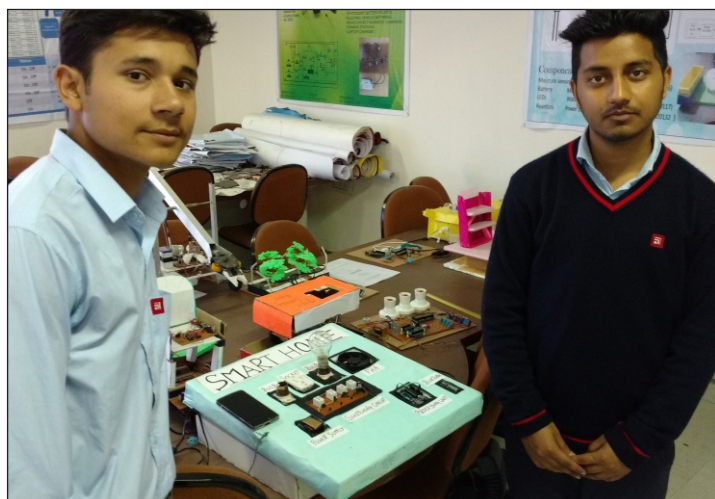
Summary - A portable, cost efficient and less power consuming system is developed to determine and display emotions of the individual and also to predict future emotions using HYBRID-NAV-MAR algorithm to combine Naïve Bayes and Markov Model algorithms and implemented using hardware consists of low power microcontroller, electrodes, temperature sensors, photo-diode etc. Parameters like GSR (Galvanic Skin Response), BVP (Blood Volume Pulse Rate) and Body Temperature are considered to determine the emotions.

Patent Filing# - 3908/DEL/2015

Automatic Multi- Level Parking System With Vehicle Tracking From Different Locations In The Building by Sagar Juneja, Saurav Kochar and Sachin Dhiman

Summary - The system comprise of two cameras C1 at the entrance and C2 in the parking lot. Using image processing C1 captures the image of number plate of the vehicle and extracts the registration number and stores it in the text file. C2 identifies the free parking slots in the parking again by using image processing (counting the number of pixels). Once the car is parked in a particular slot the back end software system assign the parking slot number to the vehicle registration number in the text file used for vehicle tracking.

Patent Filing# - 3898/DEL/201/DEL/2015





PUBLICATIONS

Research Publications

- Kumar, A., 'On Weighted Generalized Residual Entropy', Mathematical Journal of Interdisciplinary Sciences (ISSN : 2278-9561 (Print), 2278-957X (Online)), September 2015
- Kumra, N., 'Complexities in Age Structured Predator-Prey System', Applied Mathematical Sciences (ISSN:1312-885X (Print), 1314-7552 (Online)), October 2015
- Madaan, A., Sharma, V., Pahwa, P., Dass, P., Sharma, C., 'Hadoop: Solution to Unstructured Data Handling', CSI-2015 50th Golden Jubilee Annual Convention, New Delhi, INDIA, Dec 2-5, 2015. Proceeding to be published by SPRINGER.
- Saini, R., Sharma, C., Kumar, M., Rangra, A., Madaan, A., 'Implementation of equivalence of deterministic finite state automation and non-deterministic finite state automaton in acceptance of Type-3 languages using programming code', CSI-2015 50th Golden Jubilee Annual Convention, New Delhi, INDIA, Dec 2-5, 2015. Proceeding to be published by SPRINGER.
- Kumar, M., Sharma, C., Dhiman, A., Rangra, A., 'Performance Variation of Routing Protocols with Mobility and Scalability in MANET', CSI-2015 50th Golden Jubilee Annual Convention, New Delhi, INDIA, Dec 2-5, 2015. Proceeding to be published by SPRINGER.
- Verma, A., Handa, M., Singh, H., Sharma, C., 'WBAN: Solution to Battery Life', CSI-2015 50th Golden Jubilee Annual Convention, New Delhi, INDIA, Dec 2-5, 2015. Proceeding to be published by SPRINGER.
- Kaur, C., Sharma, C., Dhiman, A., Sharma, A., 'Variations in Routing Protocol Resulting in Improved Energy Utilization in WSN', CSI-2015 50th Golden Jubilee Annual Convention, New Delhi, INDIA, Dec 2-5, 2015. Proceeding to be published by SPRINGER.
- Garg, M., Gupta, M., 'Implementation Of Zero Proof Algorithm For Extended Wireless Body Sensor Networks', International Journal of Wireless & Mobile Networks (IJWMN), DOI : 10.5121/ijwmn.2015.7502, Vol. 7, No. 5, October 2015, pp.-23-36

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- Prakasam, C., 'Identification of Surface Water Harvesting Sites for water stressed Areas Using GIS: A Case study of Ausgram Block, Burdwan District, West Bengal, India. Management of Natural Resources in a Changing Environment (Raju, N.J., Gossel, Wolfgang and Sudhakar, M) Springer International, New Delhi. Pp 70-86., 2015
- Kanoungo, A and Sharma, A., 'Intelligent Transport System', Journal of Civil Engineering and Environment Technology, Vol.2 (4); 350-353., 2015
- Sharma, U and Kanoungo, A., 'Study of Causes of Potholes on Bituminous Roads – A Case Study', Journal of Civil Engineering and Environment Technology, Vol 2(4); 345-349, 2015
- Sharma, M and Thakur, A., 'Open Ground Storey Buildings Under Seismic Loading in Chandigarh – A Case Study', Journal of Civil Engineering and Environment Technology. Vol 2, (5); 377-380, 2015
- Singh, S. and Talwar, R., 'Performance Analysis of Different Threshold Determination Techniques for Change Vector Analysis', Journal of Geological Society of India, Springer, Print-ISSN: 0016-7622, E-ISSN: 0974-6889, July 2015
- Juneja, S., Kochar, S., and Dhiman, S., 'Intelligent Algorithm for Automatic Multistoried Parking System using Image Processing, with Vehicle Tracking and Monitoring from Different Locations in the Building', CSI 2015 Computer Society of India 50th Golden Jubilee Annual Convention Dec 2 -5, 2015, CSI Transactions on ICT being published by Springer

Book Chapters

Prakasam, C. Identification of Surface Water Harvesting Sites for water stressed Areas Using GIS: A Case study of Ausgram Block, Burdwan District, West Bengal, India. Management of Natural Resources in a Changing Environment (Raju, N.J., Gossel, Wolfgang and Sudhakar, M).



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