

RES NOVAE

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Editorial Team:

- ❖ Ms. Anu Singla
- ❖ Dr. Sachin Ahuja
- ❖ Ms. Neha Tuli
- ❖ Mr. Ravi Gupta
- ❖ Ms. Deepika Sharma

EDUCATIONAL DATA MINING: AN INTRODUCTION

Sachin Ahuja

Chitkara University

Academic institutions face an outburst of data arising from educational, administrative, research and scientific activities. There are many conventional techniques for analyzing data including statistics, management reporting and data display. Data mining offers a new advance to data analysis using techniques based on machine learning, together with the conventional methods collectively known as educational data mining (EDM). The models based on data mining represent true evidence-based decision support. This paper discusses about how data mining can be packaged in such a way that academic personnel can take part directly in data mining and thus assess the implications of using data mining in academic activities.

INTRODUCTION

“Computers promised fountains of wisdom but delivered floods of data.”

We all are familiar with the phenomenon of data explosion. Computerized systems collect data about a multitude of everyday transactions in academic institution: Data is related to students' attendance, performance, historical data, demographic data, admissions, accounts, internet usage and many more. The goal of educational data mining is to apply data mining techniques on the available data in terms of educational context and come up with a model using data mining techniques that help in decision making.

continued...



EDM involves different groups of users or participants such as students, teachers, Course developers, University/Institute Management and policy makers at Governing Bodies. Different groups look at educational information from different angles according to their own mission, vision and objectives for using data mining. For example, knowledge discovered by EDM algorithms can be used not only to help teachers to manage their classes, understand their students' learning processes and reflect on their own teaching methods, but also to support a learner's reflections on the situation and provide feedback to learners.

Educational Data Mining Process

How does educational data mining find information that academic users, researchers and analysts did not already know? How does it find information about what is likely to happen next?

This process is done through a technique called modeling and involves the following three steps:

1. Create a predictive model from a data sample using Data mining techniques.
2. Train the model against datasets with known results.
3. Apply the model to a new dataset with an unknown outcome.

In general, data mining software assists and automates the process of building and training highly sophisticated data mining models and applying these models to larger datasets.

The above Data mining process can be applied in large number of academic activities that can help in decision making e.g.

- I. Allotment of resources
- II. Assessment of the student's learning performance,
- III. Course adaptation based on the student learning behavior
- IV. Learning recommendations based on the student learning behavior,
- V. Evaluation of learning material and educational web based courses,
- VI. Feedback to both teacher and students in different courses,
- VII. Detection of typical students' learning behaviors.
- VIII. Prediction of students enrollment in particular course
- IX. Recommendations on designing a new course
- X. Recommendation on teaching/Learning methodology for specific courses

Methods/Techniques used in EDM

The EDM methods can be categorized into following general categories.

Prediction: The goal of prediction is to develop a model which can infer a single aspect of the data (predicted variable) from some combination of other aspects of data (predictor variables). Prediction has two key uses within educational data mining. In first type, prediction methods can be used to study what features of a model are important for prediction, giving information about underlying construct. In second type of usage, the prediction methods are used in order to predict what the output value would be in contexts where it is not desirable to directly obtain a label for that construct.

Clustering: Clustering is process of grouping objects into

classes of similar objects. It is an unsupervised classification or partitioning of patterns (observations, data items or future vectors) into groups or subsets (clusters) based on their locality and connectivity within N-dimensional space. Clustering is particularly useful in cases where the most common categories within the data set are not known in advance.

Relationship Mining: In relationship mining, the goal is to discover relationships between variables, in a data set with large number of variables. This may take the form of attempting to find out which variables are most strongly related/ associated with a single variable of particular interest. Broadly relationship mining is classified into four types:

- i. Association rule mining
- ii. Correlation mining
- iii. Sequential pattern mining
- iv. Casual data mining.

Outlier Detections: Outlier detection discovers data points that are significantly different than the rest of data. An outlier is an observation (or measurement) that is usually large or small when compared to other values in data set. In educational data mining, outlier analysis can be used to detect students with learning problems.

Text Mining: Text mining methods can be viewed as an extension of data mining to text data and it is much related to web content mining. Text mining can work with semi-structured or unstructured datasets such as text documents, HTML files, emails etc

Social Network Analysis: Social network analysis is a field of study attempting to understand and measure relationships between entities in networked information. The social network analysis techniques and data mining techniques for information networks can be used to examine and assess online interactions.

Summary

Data mining is a powerful analytical tool that enables educational institutions to deal with available data to uncover hidden patterns that can be transformed into knowledge pool for diverse possibilities that may include better allocation of resources and staff, proactively managing student/Faculty outcomes, and improve the effectiveness of alumni development. With the ability to uncover hidden patterns in large databases, academic institutions can build predictive models with a high degree of accuracy. By acting on these predictive models, educational institutions can effectively address issues ranging from enrolment, retention, placement, course management, feedback, failure detection, recommendations for improvements in performance of faculty/students and much more.

Dr. Sachin Ahuja, Ph.D. in Computer Science is currently working as Associate Director (Research) in CURIN-CACR. He is guiding Ph.D. and M.E. Scholars and Coordinating Office of Patent Facilitation, Licensing & Consultancy & also handling various innovative Patented Projects and Consultancies.



EXPERT TALKS DELIVERED

An expert is a man who has made all the mistakes which can be made, in a narrow field.

Niels Bohr

- ❖ Dr. S. N. Panda, Director-Research, CACR, CURIN delivered his invited talk on "Nature Inspired Computing" at CSI-Annual Golden Jubilee Convention 2015 held at New Delhi on 3rd December 2015. He said Nature has always inspired human achievements and has led to effective materials, structures, tools, mechanisms, processes, algorithms, methods, systems, and many other benefits.
- ❖ Nature has given lasting solutions to real world problems.
- ❖ Nature can be a major source of inspiration for engineering designers.
- ❖ Imitation of natural systems is often called Bio-mimicry.
- ❖ Bio-mimicry is the imitation of the models, systems, and elements of nature for the purpose of solving complex human.
- ❖ Bio-mimicry is often used in specific cases to develop solutions that mimic natural systems.

PROVISIONAL PATENTS FILED

I believe in innovation and that the way you get innovation is you fund research and you learn the basic facts.

Bill Gates

- ❖ **'Vehicle with Adjustable Chassis and its Method of Adjustment Thereof'**
Dt. 26/09/2015, No. 3060/Del/2015
Inventors:
Mr. Saajan Khurana, Mr Sahil Khullar, Mr Sahil Nautiyal
- ❖ **'Synergistic Composition of Scopolamine and Venlafaxine For Treatment Of Drug Resistant Depression'**
Dt. 29/09/2015, No. 3102/DEL/2015
Inventors:
Mr. Paramdeep Singh, Mr. Gurjeet Singh Thakur
- ❖ **'Novel Boswellic Acid Derivatives With Therapeutic Activity And Method Thereof'**
Dt. 29/09/2015, No. 3109/Del/2015
Inventors:
Dr. Sandeep Arora, Ms. Ritchu Babbar, Mr. Kartik Sharma
- ❖ **'Electronically Controlled Nursing Bed'**
Dt. 30/09/2015, No. 3133/DEL/2015
Inventors:
Dr. Amitoj Singh, Ms. Vidhyotma, Piyush Insaar, Pranay Walia
- ❖ **'Portable Human Recognition Device'**
Dt. 30/09/2015, No. 3134/DEL/2015
- Inventors:**
Mr Satyam Kumar, Mr Vikram Mangla, Mr Harmandeep Basra, Ms Arzoo Dhiman
- ❖ **'Water Purification System Based on Earthen Pot'**
Dt. 29/10/15, No. 3516/DEL/2015
Inventors:
Dr. Jyotsna Kaushal, Mr. Viren Singh Pathania, Mr. Vivek Sharma, Mr Ajay Singh
- ❖ **'Neuronal Cells Produced from Non-neuronal Cell Line Method Thereof'**
Dt.18/11/2015, No. 3770/DEL/2015
Inventors:
Dr. Varsha Singh
- ❖ **'Improved Light Spot Galvanometer'**
Dt.18/11/2015, No. 3773/DEL/2015
Inventors:
Dr. Harsh Sohal, Mr. Deepak Saluja
- ❖ **'Wireless Communication Device for Improved Wi-Fi Signal'**
Dt. 28/11/2015 No. 3888/DEL/2015
Inventors:
Sonanshu, Trinkush, Dr. Harsh Sohal

CONSULTANCY PROJECTS

1. **Promotional Case Study of Innovative**
Organisation: Excellion Innovations and Inventions Pvt. Ltd. Chandigarh
Project Head : M. Madhuri Sharma
September-December, 2015
Chitkara Business School
2. **Instructional Material Development for Module on Industrial Installation and Electric Motors**
Organisation : NITTTR, Chandigarh
Project Head: Ms. Anu Singla
October-December, 2015
Institute of Advanced Energy Research
3. **Development of Tracking Device for Luggage**
Organisation: Excellion Innovations and Inventions Pvt. Ltd. Chandigarh
Project Head: Dr. S. N Panda

Centre for Advanced Computing Research

4. **Development of Wireless Solution for a Diesel Engine Tuning Device**

Organisation: Excellion Innovations and Inventions Pvt. Ltd. Chandigarh

Project Head: Dr. S. N Panda
Centre for Advanced Computing Research

5. **Smart Luggage System**

Organisation: Excellion Innovations and Inventions Pvt. Ltd. Chandigarh

Project Head: Dr. S. N. Panda
Centre for Advanced Computing Research

6. **Diesel Tuning Device**

Organisation: Excellion Innovations and Inventions Pvt.

Ltd. Chandigarh

Project Head: Dr. S. N. Panda
Centre for Advanced Computing Research

7. **Improved Galvanometer**

Organisation: Excellion Innovations and Inventions Pvt. Ltd. Chandigarh

Project Head: Dr. Harsh Sohal
Microelectronics and Information Systems Research Centre

8. **Upgradation of Design of Control Panel of Electric heating oven for Perspex sheets.**

Organisation: Shree Innovations, Panchkula
Project Head: Mr. Gautam Malik
Chitkara School of Mechanical Engineering

CONFERENCES/WORKSHOPS/SEMINARS

An art can only be learned in the workshop of those who are winning their bread by it.

Samuel Butler

❖ **Workshop on**

“Expert Session at ASSOCHAM Conference: Generic Medicines in India: Promulgating Growth and Success”

September 3, 2015

Dr. Sandeep Arora, Director, Chitkara College of Pharmacy, delivered a talk on “Approval of Generics: Bioequivalency Studies, Methodology and Ethics” during the Conference



Generic Medicines in India: Promulgating Growth and Access”organized by ASSOCHAM and Department of Pharmaceuticals, Govt of India at Chandigarh. The Conference was mooted by ASSOCHAM in the light of recent actions by International Regulatory Agencies in relation to Generics. The Conference was chaired by Secretary General ASSOCHAM, and Coordinated by Chandigarh Chapter and represented by Industry Association Office Bearers, Pharmaceutical Industry owners, Regulatory Agency Officers from Haryana and Punjab, and representatives of Punjab Health Ministry. Sessions were conducted by Dr K K Bhutani,

Officiating Director, NIPER, Mr Ajay Singla, Drug Controller, Punjab, Mr. Sushmul Maheshwari, RNCOS Business Consultancy Services, Dr B S Bhoop, Prof Punjab Univ, Chandigarh, Sh N K Ahuja, Asstt Drug Controller, Haryana, Dr Manish Sabharwal MD, Dr. Sabharwal's Manufacturing Labs Ltd, Dr. Atul Sachdeva, Director Principal, GMCH, Chandigarh, who also was the Chief Guest at the occasion. The Conference was also attended by members of the academia in Punjab and Haryana and undergraduate and Postgraduate students. Dr. Sandeep Arora, stressed the need for ethics in conduction of Bioequivalency trials, formation of Prescription Auditing and Monitoring Agencies and Pharmaceutical Skills Audit and Accreditation, Council to ensure high level development and growth of generic medicines.

❖ **Workshop on**

“Interaction Meet on Use of Ash in Brick Manufacturing”
September 21, 2015

Mr. Saurab Khatri and Mr. Viren Pathania, students of School of Mechanical Engineering attended the 'Interaction Meet on Use of Ash in Brick Manufacturing' organized by Punjab State Council for Science & Technology, Chandigarh. It was an interactive session with entrepreneurs/ machinery manufacturers using ash in brick manufacturing. The students working on industry pollution got apprised about the burning issue of ash utilization. hip on campuses.



❖ **Workshop on
“Autodesk® Maya Unity Software”**

September 25-26, 2015

Centre for Research in Education Innovation and Learning Analytics (CrEiLa), CURIN in collaboration with IEEE and IETE Student Chapter organized a two days workshop on 'Autodesk® Maya Unity Software at Chitkara University,

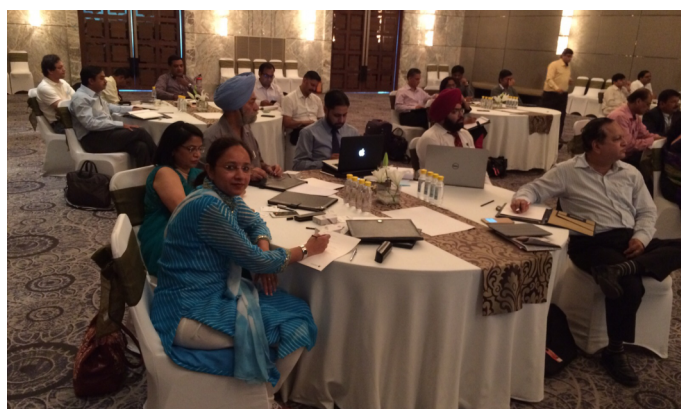


Punjab. Professional Trainers Mr. Yogendra Kumar, Mr. Ritesh Kumar and Mr. Adityaraj from Simulanis Solutions Pvt. Ltd. Delhi, conducted the workshop. The workshop was attended by faculty, research scholars working in the field of Augmented Reality and Virtual Reality and B-Tech students. The participants were made to understand and develop Augmented Reality, Virtual Reality based mobile applications. The content of the workshop included introduction to Autodesk® Maya (Modelling, Texturing and Animation), Basics of Unity Interface, Integration of Vuforia SDK in Unity, Basics of C# for Unity Programming. The participants enthusiastically participated in the whole workshop making it an interactive session.

❖ **Workshop on
“ABET Accreditation and Program Assessment”**

September 30, 2015

Dr. Madhu Chitkara, Hon'ble Vice-Chancellor and Dr. Archana Mantri attended one day workshop on ABET Accreditation and Program Assessment on 30th Sept.,



2015 in New Delhi. The workshop was conducted by ABET, in Association with IEEE Education Society Chapter, India

Council. The Objective of the Workshop was to familiarize the participants with basic concepts of Accreditation, Program Assessment, the requirements of ABET's accreditation Process and the requirements for requesting an initial program review. Dr. Joe Sussman, Chief Accreditation Officer and Chief Information Officer for ABET was the key resource person for the workshop.

❖ **Workshop on
“Evolving Blended Learning models for Engineering Education”**

October 1-2, 2015

Dr. Archana Mantri, Pro Vice Chancellor, Chitkara University, conducted workshop on “Evolving Blended Learning models for Engineering Education” during IEEE 3rd International Conference on MOOCs, Innovation and



Technology in Education, 2015 (MITE 2015) organized by IEEE Education Society at ACET, Amritsar on Oct 1 and 2, 2015. The workshop was conducted with an aim to design Blended Learning models suiting to identify need(s) and to set up an assessment process to support Blended Learning. 35 participants from various Engineering Institutes attended the workshop. Ms Avneet Hira, Ph.D. Scholar at the Department of Engineering Education, Purdue University, USA, co-hosted two sessions remotely on Skype, during the workshop.

❖ **Workshop on
“Automatic Speech Recognition”**

October 9 - 10, 2015

Dr. Amitoj Singh, Assistant Director Research, Mr. Virender Kadyan Assistant Professor and Mr. Vinay Kukreja Assistant Professor, Centre Advance Computing & Research, CURIN conducted a Two days workshop on "Automatic Speech Recognition" under ACM Students' Chapter. Guest speakers enriched the workshop with their knowledge, skills and imparted practical sessions to engross students for inter-relating theoretical skills with practical implementation. Dr. Sumapreet Kaur, Punjabi

University, Patiala gave an introduction to Phonology and linguistics. Mrs. Rupinder Kaur, Thapar University, Patiala entourage a hands-on session for building ASR system



using HTK and Dr. Wiqas Ghai imparted hands-on session on phone based modelling using HTK. The workshop emphasized an active participation of students as well as faculty members from within and outside University.

❖ Workshop on

“Events on Energy Efficiency and Conservation in Transport Sector”

November 5 - 6, 2015

Institute of Advanced Energy Research, CURIN, I.E.(India) Students' Chapter, Chitkara University in association with Petroleum Conservation Research Association (PCRA) and Bharat Petroleum Corporation Limited organized enthusiastic workshops and events on the topic



'Energy Efficiency and Conservation in Transport Sector'. The sessions were graced by eminent resource persons Mr Satish Sudhir Dy. Director, State Coordinator-Chandigarh, PCRA and other faculty members of PCRA. Workshop on 'Fuel Efficiency in Transport Sector' was conducted by Mr Satish Sudhir. More than 100 students and faculty members attended the workshop enthusiastically. Mr Sudhir aimed at promoting oil conservation and regulating it's usage. Workshop on 'Energy Conservation in Domestic Sector' was conducted by Ms Amrinder Kaur, Faculty-PCRA and Mr Sudhir. The small care and efforts may result in considerable fuel and cost savings. The careful

handling of LPG cylinder for the safety was highlighted. Ms. Promila Singh Sudhir, Dy Manager, LPG Sales, Bharat



Petroleum Corporation Limited (BPCL) deliberated on the nation wide movement “Give it Up”. A stall on energy conservation was put up by PCRA. Health check of Chitkara Transport was conducted by team from Bharat Petroleum Corporation Limited (BPCL) and student volunteers of Mechanical Engineerig. Workshop on 'Energy Conservation in Transport Sector' was conducted by Mr. Gurvinder Paul Kajla, faculty, PCRA for drivers of Chitkara buses and light vehicles. Mr M S Jassal, Dean Administration addressed the drivers to drive safely and economically with right driving habits. The various technical events were organized to embolden the technical skills of students. Digitex - Digital poster making competition and Questio – Quiz competition witnessed overwhelming response from students. Viren Pathania, 3rd Sem, School of Mechanical Engineering was adjudged winner in Digitex while Piyush



Insaa and Pranay Walia, 3rd Sem, School of Mechanical Engineering won 1st prize in Questio. Ms Anu Singla, Associate Professor, IAER faculty coordinator of the events expressed the need of conservation of fuel for secure future.

Dr. Archana Mantri appreciated the efforts of organizing team in sensitizing the students and faculty members for saving the fuel. She thanked the officials of PCRA and BPCL for their valuable association in the conduct of two days events. The events were huge success.

❖ **Workshop and Training module**
"Emerging Trends in Health Care"

November 15, 2015

Pharmacy council of India Guideline was conducted for Pharm D, M. Pharm and Nursing and health care students in collaboration with GianSagar Med College and Hospitals at Chitkara College of Pharmacy. The workshop was aimed at providing faculty and students insight into Clinical relevance



of Microbiological, Histopathological, Pathological and Microbiological tests and evaluations in design of effective therapeutic regimens for varied patients. With the establishment of the fact that different patients with their individual differences in parameters in above area, need customized therapeutic regimens for effective drug response. Lectures were conducted by Dr Harbir Kaur Rao, MD Medicine, Professor and Head, on Antimicrobial resistance Dr. Arun Suri, MD Pathology, Professor and Head, on Diagnosis of Cardiac Problems. Dr Monica Bansal, MD Pathology, Associate Professor, Latest advances in Endocrine Diseases.

Ms. Chaffy Sachdeva, Assistant Professor, Role of LFT, RFT in Health disease. The students went through live sessions on all above areas and collected data for analysis of patient variation and application of the same for clinical correlation. Dr. Gill, Dean, GSMCH, delivered an expert session as Chief guest. The workshop was Convened by Dr. Sandeep Arora, Director, Pharmacy and coordinated by Thakur Gurjeet Singh, Asso. Prof., CCP, Mr. Ravinder Jaura, Asst. Prof. CCP and Dr. P P Matreja, Asso. Prof., Gian Sagar, Medical College and Hospital.

❖ **Workshop on**
"Routing Techniques in Computer and Communication Network"

October 10-11, 2015

Dr. S. N. Panda, Director Research and his team hosted a Workshop on "Routing Techniques in Computer and

Communication Network" from 10th to 11th October, 2015. Ing. Dr. Jagdish Lal Raheja, Sr. Principal Scientist of CEERI



Pilani was the Chief Guest and about 30 candidates were participated from Haryana, Chandigarh and Punjab.

❖ **Workshops on**
"Drug Discovery Perspective" and "Clinical Emergency Management"

November 5-6, 2015

Chitkara College of Pharmacy observed National Pharmacy Week, as a professional constituent of IPA (Indian Pharma Association) by conducting event MEDVISTA on Nov 5th and 6th, including workshops on Drug Discovery, QSAR, Clinical Emergency Therapeutics, Pharmaceutical Advertising (AV), and other events including team sports. The event winded up on 6th with CCP Research and consultancy summary,



release of Annual magazine "CCP Pharma Update and News" and then a musical event compiled by society SLIM, C2S2 group, CU and Horizon Group CU, in Exploreitorium. Students from B Pharm / M Pharm / Pharm D / Healthcare / Media and C2S2 members participated in various events.

❖ **Workshop on**

“50th Golden Jubilee Annual Convention in New Delhi”

December 3, 2015

Dr. S. N. Panda, Director Research, chaired 2 Sessions in CSI-2015 Computer Society of India, 50th Golden Jubilee Annual Convention in New Delhi on 3rd December, 2015.



He delivered Invited Talks on Nature Inspired Computing and Vampire Attacks on Wireless Sensor Network.

❖ **Workshop on**

“4th International Conference on Advanced Nano-Materials & Nanotechnology”

December 8-11, 2015

Prof. I.S. Hudiara, Director Research attended a Conference

on Advanced Nano-Materials & Nanotechnology held at IIT, Guwahati. Dr. Hudiara presented his research paper in the conference.

❖ **Workshop on**

“Orientation Session on Industrial Product Magazines”

December 21, 2015

Mr. Gautam Bisht, Sr. Business Executive, Four Square Media Pvt. Limited, Ludhiana and Dr Parikshit Bansal, Director (Innovations), Excellion Innovations and Inventions Pvt Ltd., Mohali conducted an introductory session on Industrial



Product Magazines with the faculty members. Mr Bisht distributed free samples of the magazines to faculty members. The session provided an opportunity to get acquainted with right resources for updates on latest products.

**MEETINGS UNDER SHARE-
Showcase Harp Appreciate Research Exchange**

Visit to University of Birmingham, UK

24th Oct. to 1st Nov., 2015

The five days visit of Dr. Archana Mantri, Pro Vice Chancellor, Chitkara University and Ms. Meenu Khurana, Deputy Dean, School of Computer Sciences, to University of Birmingham, UK; was focused on boosting network and establishing linkages in terms of student exchange programs, and joint research collaborations. The meetings scheduled with erudite academicians, heads of schools and Researchers, were very fruitful with lot of exchanges of ideas and best practices. This visit will surely play major role in opening opportunities for students and faculty of both Universities for exchange programs and for collaborative research.



Collaborator Meet for ITRA-DBT Projects, Punjab

September 28, 2015

The meeting was held on 28th Sept., 2015 to finalize the budget for ITRA-DBT project. Dr. Sanjai Saxena (CORE-Thapar University, Patiala),



Dr. Rajesh Khanna (Thapar University, Patiala), Dr. Avnish Kumar (Government Medical College, Patiala) and Dr. Deepak Sharma (Attended through skype from IMTECH Chandigarh) attended the meeting. The technical work distribution and progress in proposal preparation for Indian Biomedchem computing soft was discussed in the meeting.

National Entrepreneurship Network (NEN) Cluster Meeting

December 8, 2015

The Wadhvani Foundation National Entrepreneurship Network (NEN) called for a cluster meet with all the Entrepreneurship

Cell Program Coordinators from various institutes and universities of North India to discuss the several aspects of



taking entrepreneurial activities proactively on campuses at BIMTech, Greater Noida. The meeting was organized by BIMTech Institute of Greater Noida. Prof. Madhuri Sharma and Dr. Sachin Ahuja were invited by NEN to spearhead the entrepreneurial activities in the northern part of the country. Mr. Asgar Ahmed, Director, NEN along with Ms Chaitali Sengupta, Regional Manager, NEN from Bangalore NEN Head Quarters came to discuss the different region specific activities and endeavors that can be jointly taken up to drive student run ventures and handhold them with effective mentoring and network opportunities. NEN is going to nominate a nodal centre for North India where Chitkara University would play a leading role. Also there were couple of government opportunities under

the Ministry of Skill Development that were also discussed which the institutes could avail to work towards driving the spirit of entrepreneurship on campuses.

Mr. Raman Talwar, Chief Executive, Simulanis Solutions Pvt. Ltd., New Delhi

December 24, 2015

Meeting with Mr. Raman Talwar, CEO of Simulanis and his team members was held in Chitkara University to discuss about their projects on Augmented Reality and Virtual Reality. The meeting headed by Dr. Archana Mantri, Pro Vice Chancellor and was



attended by Mrs. Deeptipreet Kaur, Mr. Gurjinder Singh, Mrs. Bhanu Sharma, Ms Shubham and Ms. Neha Tuli (Research Scholars working in the field of AR).

PUBLICATIONS

We cannot solve a problem by using the same kind of thinking, we used when we created them.

Albert Einstein

- ❖ Singh, R.P, Hudaira I.S, Pandey S, Rana S.B, 'Effect of NI-Doping on Structural, Optical and Magnetic Properties of Fe-Doped ZnO nanoparticles', Journal of Superconductivity and novel magnetism, Vol 28, Issue No. 12, December, 2015, 28:3685-3691, DOI 10.1007/S10948-015-3183-6 (Springer).
- ❖ Singh R., Kumar H. Singla R.K., 'Performance Analysis of an Intrusion Detection System using Panjab University Intrusion DataSet', 2nd IEEE International Conference on Recent Advances in Engineering and Computational Sciences held on Dec 21-22, 2015 at UIET, Panjab University Chandigarh
- ❖ Singh, R.P, Hudaira I.S, Pandey S, Rana S.B, 'Effect of calcination Temperature on the structural optical and magnetic properties of pure and Fe-Doped ZnO nanoparticles', 4th International Conference on Advanced Nanomaterials and Nanotechnology. 8-11 Dec, 2015, IIT, Guwahati.
- ❖ Dawar N., Chitkara M., Sandhu I.S., Jolly J.S., Malhotra S., 'Crystallographic and morphological characterization of pure and nickel doped barium nanohexaferites synthesized using chemical co-precipitation technique', International Conference on Nanoscience, Nanotechnology & Advanced Materials, Visakhapatnam, 530045, Andhra Pradesh, India, Nanos December 2015.
- ❖ Malhotra S., Chitkara M., Sandhu I.S., Dawar N., Singh J., 'Structural and Magnetic properties of Strontium Hexa-Ferrites Synthesized by Chemical Co-precipitation Method', International Conference on Nanoscience, Nanotechnology & Advanced Materials, Visakhapatnam, 530045, Andhra Pradesh, India, Nanos December 2015.
- ❖ Aggarwal T., Khatri. S, and Singla A., 'Energy Efficient Measures for Sustainable Development of Data Centres', Computer Society of India, CSI-50th Golden Jubilee Annual Convention, New Delhi Dec. 2-4, 2015.
- ❖ Jolly J.S., Chitkara M., Sandhu I.S., Dawar N., Malhotra S., 'Pure and cobalt doped barium hexaferite nanoparticle

- study: Synthesis and characterization', International Conference on Nanoscience, Nanotechnology & Advanced Materials, Visakhapatnam, 530045, Andhra Pradesh, India, Nanos December 2015.
- ❖ Khatri. S and Singla A., 'Study of Pollutant Emissions from Cement Plants and Preventive Measures', 31st National Convention of Environmental Engineers & National Seminar on Climate Change-Need for Global Partnership, The Institution of Engineers, Chandigarh November 6-7, 2015.
 - ❖ Gupta A., Aggarwal T., and Singla A., 'GREEN IT: An Upcoming Trend Emerging For Renewable and Sustainable Environment', Computer Society of India, CSI-50th Golden Jubilee Annual Convention, New Delhi Dec. 2-4, 2015.
 - ❖ Shukla A.K., Kumar S., Sandhu I.S., Oinam A.S., Singh R., Kapoor R., 'Dosimetric study of beam angle optimization in intensity-modulated radiation therapy planning', J Can Res Ther (2015, Accepted, Ahead of Print, Printed online.
 - ❖ Shukla A.K., Kumar S., Sandhu I.S., Oinam A.S., Trivedi G., 'Improvement in IMRT dose calculation with penumbra corrected AAA algorithm using film dosimetry'. (Communicated in Radiology and Oncology)
 - ❖ Juneja S., 'Strategic Partnership with Industry to Strengthen Core Competency in Electronics – Need, Opportunities, Challenges & Success Stories' has been accepted for poster presentation" at ICTIEE 2016.
 - ❖ Ahuja S., "Analyzing Students Performance and Knowledge creation at Master's Level in Flip Mode Classroom" has been accepted in Third International Conference on Transformations in Engineering Education, ICTEE 2016.
 - ❖ Sagar Juneja, "Strategic Partnership with Industry to Strengthen Core Competency in Electronics – Need, Opportunities, Challenges & Success Stories" has been "accepted for poster presentation" at ICTIEE 2016.
 - ❖ Sachin Ahuja, "Analyzing Students Performance and Knowledge creation at Master's Level in Flip Mode Classroom" accepted in Third International Conference on Transformations in Engineering Education, ICTEE-2016.

OUR RESEARCH REVIEWERS

Innovation is not about saying yes to everything. It's about saying no to all but the most crucial features.

Steve Jobs

- ❖ Dr. I.S.Hudiara, Director Research reviewed two research papers entitled "2D Antenna Array design for full ntenna array design for design folr full dimension MONI for next generation wireless networks" and "Mathematical formulation of surface conductivity for graphene material" for International Journal of Engineering Science and Technology (JESTECE) Malaysia.

ACHIEVEMENTS

Innovation distinguishes between a leader and a follower

Steve Jobs

- Trinkush Singla and Sonanshu of CSE, achieved the following under the guidance of CURIN:
- ❖ Research paper approved for publishing in IEEE Eclectica Magazine
 - ❖ Bagged 1st position in PECfest 2015 Chandigarh, IEEE Research paper presentation
 - ❖ Provisional draft issued on 15-Jan-2015, patent no. 135/DEL/2015

SHORTLISTED/ GRANTED /APPROVED RESEARCH PROPOSALS

If you want to stand out from the crowd, give people reason not to forget you.

Richard Branson

- ❖ The project "Language Resources for Auditory Impaired persons" submitted by Dr. Amitoj Singh, Assistant Director, Research & Mr. Vinay Kukreja and mr. Virender Kadyan, Assistant professor, CURIN, Ms. Vidhyotma Gandhi, ME Scholar, Chitkara University, Punjab has been approved for funding of USD 15,819 by IEEE Sight.