Jayesh K. Gupta

Junior Undergraduate

Contact Information

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Research Interests

Machine learning and pattern recognition, neural networks, signal and image processing, information theory, bioinformatics.

Education

Indian Institute of Technology Kanpur, Kanpur, India

B.Tech in Electrical Engineering, 2010-present

- **Cumulative Performance Index (CPI) 9.5 on a scale of 10** (after 4 semesters)

St. Paul's Sr. Sec. School, Jodhpur, Rajasthan, India

Senior School Certificate Examination (CBSE), March 2011

- Scored 93.8% marks in XII AISSCE, March 2011

Secondary School Certificate Examination (CBSE), March 2009

- Scored 94.6% marks in X AISSE, March 2009

Academic Achievements

- **All India Rank 477** in **IIT Joint Entrance Examination 2011**, out of around 500,000.
- Stood 10th in **Regional Mathematics Olympiad 2011**, Rajasthan Region.
- Received **Academic Excellence Award** for distinctive performance in the term 2011-12.
- Selected for **KVPY** (Kishore Vaigyanik Protsahan Yojana) Scholarship in 2011.
- Selected in the **Top 1%** in the **National Chemistry Olympiad** 2011.
- Selected in the **Top 1%** in the **Indain National Astronomy Olympiad** 2011

Publication

Nishchal Verma, Sumanik Singh, **Jayesh K. Gupta**, Rahul K. Sevakula, Sonal Dixit and Al Salour, **"Smart Phone Application for Fault Recognition"**, *2012 Sixth International Conference on Sensing Technology (ICST2012)* vol., no., pp.„ 18-21 Dec. 2012

Research Experience

Condition Based Monitoring of Air Compressors and Motors using Acoustic Data — **Summer 2012**

Mentor: Dr. Nishchal K. Verma — *R&D Project, IIT Kanpur*

We developed a Smart Phone application, to learn different fault states of an industrial air compressor. The application was tested to recognize the fault state in real time as the air compressor was running. It has performed very well with classification accuracies above 93.73%. It is believed that similar application and model with some minor changes in specifications can be used for acoustic pattern recognition in wide range of fields; especially in industry.

Feature Level Analysis — **Winter 2012**

Mentor: Dr. Nishchal K. Verma — *R&D Project, IIT Kanpur*

We took a case study of acoustic and vibrational features from different working states of an air compressor and graphically analyzed them to derive the best feature set. We built an SVM model based upon these features and got comparable results to the standard PCA based SVM model.

MTBA: Matlab Toolbox for Biclustering Analysis — **Summer 2013**

Mentor: Dr. Nishchal K. Verma — *R&D Project, IIT Kanpur*

We worked on a new Matlab toolbox, MTBA, designed to perform a variety of biclustering algorithms under a common user interface while providing additional facilities for data preprocessing, visualization, and validation. This allows the user to compare biclustering results from different algorithms and choose the approach that best fits their particular scenario.
MTBA is freely available at http://home.iitk.ac.in/~jayeshkg/mtba/

Projects Undertaken

Autonomous Quadrotor **Summer 2012**

Summer Project under Electronics and Aeromodelling Club, IIT Kanpur

Built a quadrotor using Arduino Mega 2560 for onboard processing and IMU Razor 9DOF for orientation determination. Xbee was used to communicate with the Arduino from an external computer.

Technical Skills

- *Languages*: C, Java, R, Python, Haskell, SQL
- *Software/Libraries*: Matlab, GNU Octave, Android SDK, GNU Emacs, OpenCV
- *Tools*: UNIX shell scripting, LaTeX, HTML5, CSS3

Relevant Courses

- Real and Complex Analysis, Linear Algebra, Differential equations, Probability and Statistics
- Microelectronics (Analog Circuits), Signal Systems and Networks, Control System Analysis
- *Presently doing:* Data Structures and Algorithm, Principles of Communication, Power Systems, Digital Electronics and Microprocessor Technology
- *Next semester:* Digital Signal Processing, Electromagnetic Theory, Microelectronics-II (Devices), Communication Systems

Positions of Responsibility

- **Hobby Group Leader**, Science CoffeeHouse
  Managed the activities of the science discussion group at IIT Kanpur.
- **Institute Student Guide**, Counselling Service, IIT Kanpur,
  Mentoring 6 freshmen to guide them for a smoooth transition into campus life in both academic and extracurriculae spheres.
- **Quiz Club Secretary**
  Worked for promotion of quizzing activities in the institute. Organized various quizzes, including *National General Quiz* at Antaragni 2012.