Akhilesh Bakshi

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DD 5th Year
Mechanical Engineering
Thermal and Fluid Engineering

CPI   : 9.09
Class X Board : 91.2%
Class XII Board: 94.6%

ACADEMIC ACHIEVEMENTS

- Recipient of **NTSE Scholarship '05** (National Talent Search Examination) by NCERT till date
- **AIR 964** (amongst > 250,000 entrants) in IITJEE '07 and **AIR 634** (amongst > 600,000 entrants) in AIEEE '07
- Awarded a **Merit Certificate** in Social Science by CBSE for being amongst the top 0.1% in Class X boards
- Secured **AIR 57** in **NSTSE '03** (National Science Talent Search Examination)

RESEARCH PROJECTS

Design of Free Piston Shock Tube (FPST) | *Dual Degree Project*   *(May '11-till date)*
- Designed a facility to improve the final shock strength to Mach 5 for further use in combustion research
- Optimized the geometric and injection parameters and simulated the piston motion on MATLAB
- Undertook detailed study of catalogues to select pressure and motion sensors for experimental analysis

Development of Electrohydrodynamic (EHD) Micropumps | *McMaster University*   *(May '10-Jul '10)*
- Amongst 102 students selected on all India basis for the **MITACS Globalink Internship Award**, Canada
- Developed and modeled a liquid based microscale cooling technology on COMSOL Multiphysics
- Optimized the numerical technique based on a parametric analysis of the geometric variables

TUM TUM Revamp Model at IITB| *Human Computer Interaction*   *(Jan'10-Apr'10)*
- Analyzed the Tum Tum (internal bus service) requirement and limitations through contextual interviews
- Designed a biometric system to improve its operational efficiency with extension of its application to enhance ease of cash transactions and ID verification on campus
- Tested hard prototypes and implemented user feedback to improve its design elements

Analysis of Internal Pipe Flow | *IIT Bombay*   *(May '09-Jul'09)*
- Formulated an analytical solution to internal rarified gas flow in pipes with velocity slip and temperature jump wall boundary conditions; the results were verified with existing experimental data

KEY COURSE PROJECTS

ASME Student Design Competition 2011 | *Machine Design*   *(Jul'10-Nov'10)*
- Designed a working propeller system to drive a model car employing potential energy of stored water

Expansion Devices in Vapor Compression Systems | *Refrigeration and Air Conditioning* *(Jan'11-Apr'11)*
- Characterized and compared the performance of expansion devices used in industry

Line Marker | *Kinematics and Dynamics of Machines*   *(Jan'10-Apr'10)*
- Constructed a single degree of freedom mechanism to plot straight lines uniformly spaced on a paper roll

Steam Injected Gas Turbines | *Applied Thermodynamics*   *(Jan'10-Apr'10)*
- Evaluated the impact of injecting steam in gas turbine cycles on the efficiency and NOx control

Ignition Control of HCCI Engines | *Internal Combustion Engines*   *(Jan'11-Apr'11)*
- Conducted a literature review on exhaust control of HCCI Engines by adaption of fuel molecular structure

PUBLICATIONS

On the Modeling and Simulation of Ion Drag Electrohydrodynamic (EHD) Micropumps
ASME (American Society of Mechanical Engineers) Journal of Fluids Engineering, Volume 133, Issue 5
- Developed and modeled a liquid based microscale cooling technology on COMSOL Multiphysics
- Employed a numerical technique based on corona discharge and validated with experimental data

INDUSTRIAL EXPERIENCE

Siemens Power Engineering Limited | _Gurgaon_   _(Dec'10)_
- Worked on the selection parameters for strainers in Online Tube Cleaning System
- Modeled the HVAC load analysis and AC requirement for Power Plant (DGEN and SUGEN) site office
- Analyzed the various shock load cases in piping design for power plants

COMPUTATIONAL SKILLS

- **Modeling Software**   **:** ANSYS Fluent-Gambit, ANSYS Multiphysics, COMSOL Multiphysics
                                    Mathematica, MATLAB/Simulink, LabFit
- **Other Software**   **:** Adobe Photoshop, Adobe Lightroom, Photomatix
- **Programming languages :** C++
- **Operating Systems**   **:** Windows , Linux (Ubuntu, Fedora)

POSITIONS OF RESPONSIBILITY

Institute Student Mentor | _Institute Student Mentor Program, IITB_   _(Apr '11-till date)_
- Selected to mentor 12 freshmen throughout their 1st year

Department Academic Mentor | _Department Academic Mentorship Program, IITB_   _(Apr'11-till date)_
- Academic mentor to two underperforming 3rd year students of Mechanical Engineering
- Developed **CourseWiki** for core Mechanical Engineering courses
      (Database of online study material to develop interest / improve performance of UG students)

PAF Music Coordinator | _"Chasm-e-Nam"_   _(Feb'11-Mar'11)_
- Received **PAF Color** for coordinating and performing; PAF secured 2nd position in the Music category

Teaching Assistant | _Course: Basic Thermodynamics_   _(Jul'11-till date)_
- Assisted the instructor in clarifying doubts and evaluating the interim examinations

Organizer | _Competitions, Mood Indigo_   _(Dec'07)_
- Organized Music competitions like Classical Jugalbandhi, Hindustani Vocals and Indian Duet Singing

Head Boy | _High School_   _(Jul'05-Jul'06)_
- Endeavored to lead through example; awarded the "**Student of the Year**" by The Times of India (NIE)

EXTRA CURRICULAR ACTIVITIES

- Performed in Surbahar, Unplugged and Acoustic Dusk; **the biggest musical events** at IIT Bombay
    - Performed as a Tenor as part of an acapella group, 'Ninetendos'
- Completed the A level vocal training by **Akhil Bhartiya Gandharva Mahavidyalaya Mandal**, Mumbai in 2001
- Led school delegation to the **Indian Model United Nations (INMUN), 2003** organized by Ryan International
- Represented the school at the Material's Quiz hosted by Indian Institute of Metals, Kalpakkam
- Underwent ground training and performed a **parachute jump** at the Parachute School of Toronto, Canada
- Acknowledged for social service by **Helpage India** for assisting in raising funds for the care of the elderly
- Won numerous awards in music, debating and quiz competitions at the Intra and Inter School level
- Led the winning team of SPL, an intra-hostel football tournament of Hostel 7
- Involved in professional photography over the past year