

EDUCATION

Year	Degree	Institution	Performance
2014	B.Tech, Computer Science and Engineering	IIT Kanpur	8.8/10.0
2010	Class XII : CBSE Board	Lawrence and Mayo School, Kota	82.0%
2008	Class X : CBSE Board	Choithram School, Indore	91.4%

PUBLICATION

- **V. Mishra, R.K. Ghosh, V. Kataria, "Indoor Navigation System Using Optical Mouse Sensor & Smartphone",** in *Proceedings of Fifth International Conference on Indoor Positioning & Indoor Navigation (IPIN)*, Busan, Korea, October 2014 and IEEE Xplore Digital Library

SCHOLASTIC ACHIEVEMENTS

AWARDS	<ul style="list-style-type: none"> • IIT Kanpur Academic Excellence Award for academic year 2011-12, awarded to top 5% students in the department • Certificate of merit for being placed in top 1% in National Physics Olympiad and Chemistry Olympiad 2010
SCHOLARSHIPS	<ul style="list-style-type: none"> • Merit Cum Means Scholarship for all 4 years of IIT for excellent performance in academics • Shortlisted for Aditya Birla Scholarship for academic Excellence in year 2010
RANKS	<ul style="list-style-type: none"> • Achieved an All India Rank (AIR) of 153 in IIT-JEE among 0.5 million candidates in 2010. Percentile: 99.95% • Secured 1st Rank in International Mathematics Olympiad organized by SOF in year 2008. Percentile: 99.99% • Secured AIR 58 in National Science Olympiad organized by SOF in year 2008. Percentile: 99.99%

WORK EXPERIENCE

Arista Networks India Pvt Limited, Bangalore Designation: **Software Development Engineer** (Jul 2014- till date)

- The development is in C, C++ and Python with focus on scale

Title: Command line interface (CLI) to display unprogrammed routes in kernel

- **Designed a model** for storing and displaying routes programmed in the userspace but not programmed in the kernel
- **Developed a CLI command** for displaying all the unprogrammed routes along with their errors
- **Debugged a live customer issues and network problems** in case where packets are not sent as expected

Title: Optimization of "show ip route x.x.x.x" command

- Handled **scalability issues** with CLI output when more than **64000** IPv4 or IPv6 routes are programmed on a switch
- **Analysed the python profiling data**, and determined the **CPU intensive** tasks that could be optimized
- Reduced the time taken for the display of 64k routes from **89sec** to **16sec** which improved the **efficiency by 550%**

B.Tech PROJECTS

Android Application for Hindi Gesture Based Writing (Jan-April 2014)

- Built an **Android application** which **processes user's drawing gestures** and predicts possible Hindi characters based on them
- Character set implemented: **constants, vowels, matras and numerals**. User could also correct wrongly predicted word
- Application **trains itself according to user**. Threshold score for each character is calculated based on a **heuristic algorithm**
- **Dictionary based prediction** is implemented to predict three possibilities of word that user tries to write

Build Hindi and Bangla OCR System for Crowd Sourcing (Aug-Nov 2013)

- Implemented a **crowd sourcing system** that would take an image and perform OCR on it. User could also edit the output text
- Analyzed and summarized the existing **OCR systems for Hindi and Bangla Language** for their efficiency and robustness
- Analyzed **performance for Tesseract** (Google OCR system) based on correctness of word and character

KEY ACADEMIC PROJECTS

Low cost Indoor Navigation System for Visually Impaired (Jan-July 2014)

- Developed indoor navigation system comprising of an optical mouse sensor based **wireless navigation system** kit for displacement detection and an Android smartphone for position computation
- Provided support for path finding **A-star path finding algorithm**. Achieved **high accuracy (~98%)** with the prototype costing less than **40USD**
- **Sanctioned** a grant of upto **5 lakhs** under the **Google IIT Pilot Program**

Compiler for a subset of C++ to MIPS Assembly: Compiler Design (Jan-April 2013)

- Designed a compiler for a subset of C++ programming language which can generate code for SPIM architecture with the following features support: **Data types, Operators, Statements, Functions** (with return type and recursion),
- Lexical, syntax, semantic analysis followed by **intermediate code generation** and final code generation

Parsing Natural Scene Images using Recursive Neural Network(RNN): Artificial Intelligence (Jan-April 2013)

- **Oversegmented** an image into super-pixels using **Mean Shift Algorithm** based on similarity of the neighboring pixels
- **Extracted different features** (like color ,shape feature) from the various segments and mapped it to semantic space
- **Implemented Recursive Neural Network** to merge different super-pixels so as to output different segments

Taxi Pooling Application: Software Engineering

(Aug-Nov 2013)

- **Developed** an android application which allows users to find their partners for **sharing their trips** with other people
- Designed an **efficient database** optimizing it such that queries and data retrieval take minimum amount of time
- The application has various features including searching existing trips, creating a new trip and getting notified whenever another user requests to join a trip. User can either accept or reject the request

Library Management System: Database Systems

(Mar-April 2013)

- **Developed** an application of library management system with features of searching, requesting and reissuing of book
- Designed **E-R model** for students and items sharing database and implemented in MySQL. Model was **normalized to 3NF**
- The application has **various levels of hierarchy** with various **permissions** to a user in a specific hierarchy

PINTOS: Operating Systems

(Aug-Nov 2012)

- The project aimed at providing various **functionalities to PINTOS**, instructional software that runs as secondary OS on Linux
- Implemented **POSIX message queues**, threads, processes, **multiprogramming**, scheduling policies, virtual & shared **memory management and file-system**
- Complied with POSIX standards; Implemented and studied various **scheduling policies** viz. FCFS, SJF, RR; Used C

Implement an Email Client: Computer Networks

(Aug-Nov 2012)

- Developed a **desktop email client** in python which allows user to configure multiple email accounts(like Gmail, Yahoo)
- Allows user to send mails in pending mode when no internet connectivity available (offline mode)
- Supports IMAP for retrieving mails and **POP3 and SMTP** for sending mails

Interpreter for Oz: Functional Programming

(Aug-Nov 2012)

- Implemented an interpreter for **kernel language of Oz** in Oz language
- Handled complete kernel language of Oz including data-flow variables, lists, functions, recursion, **threading and concurrency**, lazy functions, pattern matching etc.

Implementation of SDLX Processor on FPGA Unit

(Aug-Nov 2011)

- **Designed a Digital clock** module which gives time as the output and could also perform some utility functions including alarm clock and stopwatch. Coding was done in **BlueSpec Verilog**
- **Designed a simple processor** by implementing an ALU which takes two 4 bit inputs and a 3 bit opcode to select the operation to be performed and output a 4bit number on a 7 segment display of FPGA using Register files

SUMMER INTERNSHIPS

Arista Networks India Pvt Limited, Bangalore

(May-July 2013)

Title: Feature Development on top of routing protocol IS-IS

- **Displayed a warning** when IS-IS is enabled on an interface with no ip address configured
- Created various automated python scripts **to test** the integrity of the code so as to cover all the permutations

Travelyaari – Online Bus Ticket Website

(May-July 2012)

Title: Project aimed at Analysing, Parsing of travel logs and Data visualization in the form of graphs and charts

- Created a C#/MySQL tool to analyse and process server logs(~ 1GB/day) and store it in a structural format
- Visualized data as **charts and graphs** based on the aggregated data from the log analysis using tools like PHP,CSS
- **Enhanced Database Performance** by writing stored procedures and sent out **scheduled email reports**
Developed a system to monitor and send bookings and transaction reports over email

TECHNICAL SKILLS

Programming Languages	C, C++, Java, Python, HTML, PHP, Java Script, Oz, Smalltalk, Assembly Language ,Bluespec
Platforms	Windows, Linux
Tools	LaTeX, Beamer, Yacc, Make, Shell, awk, GNU Octave, SQL, GDB, MATLAB, Autocad, Eclipse

RELEVANT COURSES

Computer Science: Algorithms and Systems, Computer Networks, Mobile Computing , Compiler Design , Operating Systems, Computer System and Organization , Data Structures & Algorithms I, Algorithms II, Artificial Intelligence, , Introduction to Software Engineering ,Principles of Database Management, Theory of Computation, Principles of Programming Languages

Mathematics: Probability and Statistics, Discrete Mathematics, Mathematical Logic, Statistical Simulation and Data Analysis

EXTRA--CURRICULAR ACTIVITIES/ POSITIONS OF RESPONSIBILITY

- Awarded **Judges Choice Award** for developing a social app for local shopkeepers in **Yahoo HACKU'12** using YQL and PHP
- **Coordinator**, IDEAS, Business Plan Competition in Techkriti, Annual Technical Festival in year 2013
 - Managed team of 12 people to efficiently **handle 30% increased participation**, making it **Flagship event**
 - Arranged **one to one mentoring** for many of the finalists, with supporting **Angel Investment Firms** and eminent people on Judging Panel
- **Secretary**, Dramatics cell, Antaragni, Annual Cultural festival, '11- '12
- Completed one year training program of **National Cadet Corps (NCC)** in IIT Kanpur , '10-'11