Pranav Maneriker

Contact Information

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Education

Indian Institute of Technology Kanpur
BTech in Computer Science and Engineering (2012-present)
Cumulative Performance Index: 9.1/10.0 after 7 semesters

All India Senior School Certificate Examination, CBSE India
Scored cumulative **97.0%** marks in Senior Secondary School (2012)
School Topper

All India Secondary School Examination, CBSE India
Scored a CGPA of **10.0/10.0** in High School (2010)
Awarded **Certificate of Merit** for exceptional performance

Honours and Awards

Selected for Aditya Birla Group Scholarship (2012-2016)
(awarded to **16 students** overall **from all IITs and BITS Pilani** combined) by Aditya Birla Group

Award for Academic Excellence, IIT Kanpur (2012-2013)
(awarded to the **top 7%** of the batch)

Awarded Kishore Vaigyanik Protsahan Yojna fellowship, (2010)
(236 fellows were selected) by Indian Institute of Science,Bangalore

Scholastic Achievements

Secured an All India Rank of **145** in **Joint Entrance Examination**, 2012 conducted by Indian Institute of Technology

Secured an All India Rank of **39** in **AIEEE-2012**

Stood **22nd** in the Onsite Regionals in **ACM ICPC** (International Collegiate Programming

Contest) **Amritapuri Regionals, 2014** (as a part of team MemoryOverflow)

Qualified for Onsite Regionals in **ACM ICPC** (International Collegiate Programming Contest) **Kharagpur Regionals, 2013** (as a part of team MemoryOverflow)

Selected for Indian National Chemistry Olympiad (**InChO**) (top 300 in the country)

Qualified for the Award of **INSPIRE scholarship**

Attended the **Vijyoshi Science Camp**,Bangalore (2011)

International Olympiad of Informatics (SilverZone foundation) Gold Medal (2011)
Olympiad Rank:5

International Olympiad of Mathematics(SilverZone foundation) Gold Medal (2011)
Olympiad Rank:9

Projects

Gesture Recognition using Webcam
Summer Project under Programming Club, IIT Kanpur
Navigation and OS operations using gestures detected by a webcam (May ’13 - June ’13)
Used OpenCV for image processing
Gesture detection is implemented using Machine Learning
Github repo: https://github.com/pranavmaneriker/gest-recof

Centralised Version Control System (Aug ’12 - Nov ’12)
Advanced Track Project for ESc 101:Fundamentals of Computing under Prof.Sumit Ganguly
Used a Java based front end and mySQL , ApacheDB backend to design and develop a version control system based on Git
Among the top 2 of 11 projects

Rubik’s Pocket Solver
Summer Project, Rubik’s Cube Hobby Group, IIT Kanpur **(**June ‘14)
Built an <R,U,F> (3-gen) optimal solver for the Rubik’s Pocket Cube (2x2x2)
Github repo: https://github.com/pranavmaneriker/RubiksPocketSolver

Mathematics of the Rubik’s Cube
Summer Project, Rubik’s Cube Hobby Group, IIT Kanpur **(**June ‘13)
Worked on group theory applications on the Rubik’s Cube.
Worked on **fewest moves** and **blindfolded solving**.
Conducted a lecture on fewest moves techniques.

12th Five Year Plan Hackathon (April '13)
Received Certificate of Appreciation (placed 3rd in IITK) for Hackathon organised by National Innovation Council, Government of India

Scissor Lift (Jan-Apr '14)
Semester Project, TA202
Built a scissor lift based mechanism which could lift about 35-40 kgs.
Design prototype built using **Autodesk Inventor**
Awarded Certificate of Appreciation (awarded to top 5 projects)

Extended NachOS Operating Systems (Aug – Nov '14)
Semester Project, CS330
Implemented system calls pertaining to Fork, Exec, Join, Yield, Sleep and Exit
Implemented UNIX, First in First Out, Round Robin, Shortest Job First and Non-Preemptive job scheduling algorithms
Implemented Random, First in First Out, Least Recently Used (LRU) and LRU Clock page replacement algorithms

Resume, Homepage creator (Aug – Nov '14)
Semester Project, CS252
A web application built in **Ruby on Rails** allowing the usage of multiple predefined templates.
Also allow user created templates .
Used for generation of resumes in various standard formats such as latex, pdf, and html
A json api is provided for accessing the data
Link: **https://github.com/pranavmaneriker/template-creator**

OpenGL Game (Aug – Nov '14)
Semester Project, CS360
Implemented a game using the core openGL API
Implemented basic physics, textures loading, a navigable (3d) camera and blinn-phong shading
Link: **https://github.com/pranavmaneriker/pogo-flip**

Java Compiler (Jan – Apr '15)
Semester Project, CS335
Implemented a compiler for a subset of Java to MIPS in C++
Supports looping expressions, type checking, primitive datatypes, 1D arrays and recursion
Link: **https://gitlab.com/sara_polyn/cs335-course-project**

Bayesian Hierarchical Models for Natural Scene Classification (Jan – Apr '15)
Semester Project, CS679
Implemented a classifier for natural scene categories for the SceneClass13 dataset based on the paper by Fei-Fei Li and Pietro Perona.
Uses a bag-of-words model to learn codewords in the dataset

The classification is done using a Markov Chain Monte Carlo algorithm

SVM Approximation Methods (Aug – Nov '15)

Semester Project, CS678

The project involved a theoretical study of some state to the art SVM approximation methods - LDKL and DC-Pred++.

Link: **http://pranavmaneriker.github.io/assets/cs678-report.pdf**

Mozart/Oz (Aug – Nov '15)

Semester Assignments, CS350

Solution to some functional programming assignments in Oz. In particular, the assignments involved

- Lazy programming
- Multi threaded code
- Stream based algorithms

Also implemented an interpreter for the declarative semantic model of Oz, including support for threads.

Link: **https://gitlab.com/pranavmane/CS350**

Reinforcement Learning in Haskell (Aug – Nov '15)

Semester Project, CS653

A library for reinforcement learning in Haskell. It includes the implementation of Q-Learn, SARSA and an example game (cat and mouse).

Link: **https://github.com/arnabgho/RLearnHaskell**

Internships

Aurus Network Infotech Pvt Ltd. (as Developer) (May - July '14)

Worked with a team of 11 people on the following projects

www.superprofs.com

- Created One Time Password and order creation modules in php (Yii 2) with a backend in mysql
- Created discount coupons system for orders with a strategy pattern based rule system
- Assisted in the development of the (ember js based) registration form for professors
- Developed an ember.js based application for discussion forums (with a backend in hapi js/mysql)
- Page for video player and lecture list view in emberjs

www.coursehub.tv

- Developed a missed call based api (php, Yii1.1) which allowed recording start stop via missed call from registered user. Also developed the frontend for user registration for this service
- Researched the application of webRTC(mainly licode)for use as a server/client app for screenshare and video recording

Adobe Big Data Intelligence Lab (as Research Intern) (May - July '15)

Worked on summarization of articles on social media

Areas of Work:

- **Deep Learning**

- **Computer Vision**
- **Approximation algorithms**
- **Natural Language Processing**

Relevant Courses

Data Structures and Algorithms
Machine Learning for Computer Vision
Probabilistic Machine Learning (*)
Modern Cryptology (*)
Computer Systems Security (*)
Approximation Algorithms
Principles of Databases
Compiler Design
Principles of Programming Languages
Learning with Kernels
Functional Programming
Computer Graphics
Operating Systems
Theory of Computation
Computer Organisation
Discrete Mathematics
Abstract Algebra
Linear Algebra and ODEs
Partial Differential Equations
Computing Laboratory
Fundamentals of Computing
Probability and Statistics
Logic in Computer Science
Complex Analysis
Analytical Calculus

Technical Skills

Languages: C++, Java, Haskell, C, Python, PHP, Javascript, Bash (shell scripting), SQL, Perl , HTML/CSS, BlueSpec Verilog, Assembly(MIPS ISA)

Frameworks: Ruby on Rails, PHP: Yii , Javascript: EmberJS , nodeJS

Other tools: LaTeX , CUDA, Git, OpenGL, OpenCV,vim ,Beamer, GNUPlot, Octave , MATLAB , Autodesk Inventor, webRTC

Extra Curricular Activities

National Record Holder
Ex national record holder for solving **Rubik's Cube** in **Fewest Moves, one handed solving**
Also among the fastest solvers in the institute.

Programming Contests

Actively involved in contests on codeforces.com,topcoder.com (handle: **PM1729**)

Club Involvements
Rubik's Cube Hobby Group
Programming Club
Science Coffeehouse

Positions of Responsibility

Academic Mentor under Counselling Service, IIT Kanpur ('13-'14)
Provided academic mentoring for Introduction to Electrodynamics (Phy103)
Took classes at Hostel and Institute level

Coordinator , Rubik's Cube Hobby Group, IIT Kanpur ('14 - '15)
Organisation of club activities and workshops in the Institute
Multiple workshops organised which were attended by 100+ people.
Coordinated a team that taught the basic technique of solving.

Coordinator , Indian Open Rubik's Challenge '14, Techkriti, IIT Kanpur
Involved in the management of events in the competition

Course Teaching Assistant, Data Structures and Algorithms (Aug '15- Nov '15)
Designing problems for theoretical assignments
Grading of assignments and exams
Batch size of ~200 students

Course Tutor, Introduction to Programming (Jan '16 - present)
Responsible for conducting tutorials and supervising a lab weekly for a batch of 35 students.
Also responsible for designing lab assignments and exam questions as well as their grading.

Areas of Interest

Algorithms
Cryptography
Programming Languages
Parallel Programming
Machine Learning
Artificial Intelligence
Web Development
Abstract Algebra

Mathematical Logic
Combinatorics
System Architecture
Graph Theory
Computer Graphics