Ashwin Pathak

Curriculum Vitae

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Education

2015-Present	**B.Tech(Honours) in Computer Science and Engineering**, *International Institute of Information Technology*, Hyderabad, *CGPA :* **9.25**.
2013-2015	**Senior Secondary, CBSE**, *Vijayvergiya Bal Vidyalaya*, Kota, *Percentage:* **94.6%**. **Topper of the school.**
2013	**Secondary, CBSE**, *St. Joseph's Convent S.S. School*, Sagar, M.P. *CGPA:* **10**

Experience

May 2018-Present	**Amazon Software Development Intern**, 2 MONTHS SOFTWARE DEVELOPMENT INTERN, Amazon Hyderabad India. Working on a new widget for **Amazon Business Homepage**.
Jan 2018 - April 2018	**Teaching Assistant**, COMPUTER GRAPHICS, IIIT. Worked under **Prof. Avinash Sharma** to conduct tutorial sessions for the second year undergraduate students.
Feb 2017-May 2017	**SciPy.diff**, OPEN SOURCE CONTRIBUTOR, Python Software Foundation. A contributor to the open source organization of library scipy of python. Worked on the implementation of a **new module: scipy.diff** to support accurate computation of derivatives using finite difference method.
Aug 2017 - Dec 2017	**Teaching Assistant**, DIGITAL LOGIC AND PROCESSORS, IIIT. Worked under **Prof. Madhava Krishna** to conduct lab and tutorial sessions for the first year undergraduate students.
May 2017 - Present	**Honours Research**, CENTER FOR VISUAL INFORMATION TECHNOLOGY, IIIT. Working under **Prof. P.J. Narayanan (Director of the institute)** in the field of **Augmented Reality** on the topic: hand-held user perspective rendering and optimization.
Aug 2016 - Nov 2016	**Web Developer**, NE78 INDIA, T-Hub. Worked in a team of 4 on a web application portal: GETrux based on PHP Laravel framework to add various gateways and enhance user interface.

Projects

Major.

- **Parallax Tolerant Image Stitching**, COMPUTER VISION.
  An implementation of parallax tolerant image stitching algorithm. It involves **geometry, homography and optimizations**.

- **Optimizing Color Consistency in Photo Collections**, DIGITAL IMAGE PROCESSING.
  An implementation of the algorithm to propagate effects of changes in a collection of photos based on the similarity between the pictures.
- **Document Classification and Clustering**, STATISTICAL METHODS IN ARTIFICIAL INTELLIGENCE.
  Developed a generative model using Gaussian Mixture Models to classify and cluster the documents.
- **Hadoop Distributed File Systems**, DISTRIBUTED SYSTEMS.
  Made a simple hadoop distributed file system without map reduce to efficiently store and organize files in a distributed manner.
- **Ultimate Tic-Tac-Toe**, ARTIFICIAL INTELLIGENCE.
  An AI bot capable of playing 4*4*4*4 Tic-Tac-Toe. It involves **heuristics, minimax, alpha-beta pruning, and iterative deepening algorithms**. Stood 6th in a tournament of similar bots
- **Linux Shell**, OPERATING SYSTEMS.
  Implemented a basic command line (bash like) Linux shell using **system-calls in C**. Capable of command inputting, parsing and execution of basic commands, along-with handling foreground and background processes concurrently using threads.
- **Remote Method Invocation**, DISTRIBUTED SYSTEMS.
  Implemented a banking based client-server system using **RMI in java**. Capable of depositing and withdrawing money virtually.
- **Bloxorz**, COMPUTER GRAPHICS.
  Implemented a 3-D game using **OpenGL in C++** very similar to miniclip's games.
  Minor.
- **Web Server**, *Socket Programming*.
- **Made a 3-D game: Bloxorz in C++**, *OpenGL*.
- **Made a 2-D Brick-Breaker game in C++**, *OpenGL*.
- **Made a Tetris game**, *PyGame*.
- **Made an animation movie using Unity (C#) and Blender**, *Computer Graphics*.
- **Survey application**, *Ruby on Rails*.
- **A simulation of a humanoid arm with analysis of design and systems engineering**, *Gazebo*.

Skill Set

OS	LINUX, WINDOWS, MACOS, ANDROID
Programming and Scripting	C, C++, PYTHON, JAVA, BASH, MATLAB, ASSEMBLY LANGUAGE, RUBY(BASIC)
Web	HTML, CSS, JAVASCRIPT, JQUERY(+AJAX)(BASIC), SPRING MVC, LARAVEL(BASIC), DJANGO, WEB2PY
Miscellaneous	MATLAB, SQLITE, NEO4J(BASIC), GIT, INTELLIJ, ANDROID STUDIO, VIM, OPENGL, UNITY GAME ENGINE, VUFORIA, MOCKITO, NOSETESTS

Relevant Courses

- Database Systems, Statistical Methods in AI, Digital Image Processing, Distributed Systems, Computer Vision, Principle of Information Security
- Graph Thoery, Computer Programming, Data Structures, Algorithms, Operating Systems, Artificial Intelligence, Computer Graphics, Computer Networks
- Introduction to Databases, Structured Systems Analysis and Design, IT Workshop(1 & 2), Digital Logic and Processors, Computer System Organization

Achievements and Extra-Curricular

- In **Dean's Merit List for Academic Excellence** (top 5% of the batch).
- Became a **National Talent Search Examination(NTSE) scholar** in the year 2013 conducted by NCERT.
- Maximum rating of 1419 in Codeforces. Handle : **ashp20**
- All India Rank 1913 among 1.3 million in Joint Entrance Exam(Mains)
- All India Rank 6050 among 0.1 million in Joint Entrance Exam(Advanced)
- Became a merit holder in maths and science Olympiads conducted by Eduheal Foundation - 2013
- Stood **4th in the National Finance Olympiad** conducted by Eduheal Foundation and co-sponsored by **Bombay Stock Exchange** - 2013
- Became a Student Mentor for the first year undergraduate students - 2017