ARSH GAUTAM

Junior Undergraduate
Computer Science and Engineering
Indian Institute of Technology, Delhi

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ACADEMIC DETAILS

Year	Degree	Institute	CGPA/Percentage
2017-Present	B.Tech, CSE	IIT Delhi	8.526 / 10
2017	Class XII, CBSE	New Sainik Public School	94%

TECHNICAL SKILLS

Languages : C, C++, Swift, JAVA, Python, MATLAB, Octave, OCaml, HTML, ARM, VHDL
Tools : Unity 3D, Xilinx ISE, Vivado, ARMSim, Autodesk

INTERNSHIPS

Software Developer Intern, Bending Spoons, Milan, Italy ***May 2019 - July 2019***

- Among the only 2 students from India to secure this internship at Bending Spoons headquarters in Milan.
- Trained on state of the art techniques in iOS development and developed various kinds of applications.
- Wrote unit tests to verify functionality and compare performance of functions in different applications.
- Built User Interface for applications involving animations and gesture recognisers using custom libraries.

PROJECTS

Ambrogio : A bill splitting bot ***Feb 2019 - Mar 2019***

Self Project, Programmed in ***JAVA***

- Developed an application to keep a track of group expenses and report the financial situation of the group.
- Tracks history of each user as well as his/her interaction with the group and the balance of all users.
- Designed a clever subset sum algorithm to ensure minimum transactions required is reported every time.

Tweet Sentiment Classifier ***Jan 2020 - Feb 2020***

Course Project under ***Prof. Parag Singla,*** *Programmed in* ***Python***

- Developed a Naive Bayes Classifier for sentiment prediction. Training data consisted of 1.6 million tweets.
- Implemented multi-variate Bernoulli event model which accounts for the frequency of each word appeared.
- Pre-processed the data using techniques like stemming and lemmatisation useing nltk library functions.
- Added features like bi-grams and tri-grams, higher adjective weight etc. to increase accuracy of the model.
- Further used TF-IDF features with model using Scikit-Learn's TFIDF vectoriser and Gaussian NB module.

FLIP : A Cannon playing AI bot ***Sep 2019 - Nov 2019***

Course Project under ***Prof. Mausam****, Programmed in* ***C++***

- Developed an AI bot to play the game of Cannon with some modified rules, presented as a course project.
- Coded minimax algorithm with alpha-beta pruning. Used Zobrist Hashing to optimise the performance.
- Heuristically determined a good node ordering and eval function to achieve a search depth of about 8-10.
- In the inter-class bot competition, qualified till the quarter finals stage in a class of 150 students.

InstaChat : A publish-subscribe social platform ***Oct 2018 - Nov 2018***

Course Project under ***Prof. Amitabha Bagachi,*** *Programmed in* ***JAVA***

- *Developed a social platform enabling users with unique ids to subscribe to other users and read posts.*
- *Used data structures like BSTs, Heaps, and Lists to perform the actions of a user and store their posts.*
- *The actions of users include writing a post, replying to a post and reading posts since last seen.*

Image Processing Library ***Jan 2019 - Feb 2019***

Course Project under ***Prof. Rijurekha Sen,*** *Programmed in* ***C++***

- Designed the library for use in CNNs. Facilitates fast matrix multiplication using parallel programming.
- Achieved a speedup of ~10% over standard libraries like MKL and OpenBLAS by creating parallel threads.
- Implemented Le-Net interface for MNIST digit recognition and checked the performance of the CNN.

ARM CPU based Computer ***Jan 2019 - Apr 2019***

Course Project under ***Prof. Anshul Kumar,*** *Programmed in* ***VHDL***

- Implemented a complete ARM CPU based computer using multi-cycle design using BASYS3 FPGA board.
- Implemented DP, DT, multiply, branch, and halt instructions. Included interrupts and serial I/O in design.

Front and Middle end of Compiler ***Jan 2019 - Apr 2019***

Course Project under ***Prof. Sanjeeva Prasad,*** *Programmed in* ***OCaml***

- Created definitional interpreter and a stack machine. Built scanner using OCaml-Lex and parser.
- Implemented type checking. Programmed Call By Value(CBV) and Call By Name(CBN) Interpreters.

RELEVANT COURSES

Operating Systems*, Parallel and Distributed Programming*, Computer Networks, Machine Learning*, Artificial Intelligence, Theory of Computation*, Algorithmic Game Theory*, Analysis and Design of Algorithms, Programming Languages, Computer Architecture, Design Practices, Probability and Stochastic Processes, Linear Algebra, Optimisation Methods*

* - Ongoing Courses

SCHOLASTIC ACHIEVEMENTS

- Secured ***All India Rank 72*** among 1.5 million candidates in JEE Advanced 2017 scoring 310/366 marks
- Secured ***All India Rank 236*** among 1.5 million candidates in JEE Mains 2017 scoring 306/360 marks
- Secured ***All India Rank 62*** among 200,000 candidates in KVPY 2015 and got awarded KVPY fellowship
- Cleared Regional Mathematics Olympiad(RMO) 2015 securing ***zonal rank 11*** and qualified for INMO.
- Secured Place in merit list ***national top 1%*** in NSE Physics, NSE Chemistry and NSE Astronomy 2017.
- Rated ***1930*** on ***Codechef*** platform which is India's most popular Competitive Programming Platform.
- Rated ***1727*** on ***Codeforces*** platform and ranked ***1074 among 18074*** programmers from India.
- Secured ***All India Rank 469*** in ***ICPC online round*** 2019 which is qualification round for ICPC regionals.
- Secured ***Global Rank 609*** in ***Google Kickstart*** Round F 2019.
- Secured ***All India Rank 388*** in ***Google HashCode*** Qualification Round 2020.
- Secured ***Global Rank 71*** in October Lunchtime 2019 on ***Codechef*** platform.
- Secured ***Global Rank 186*** in January Lunchtime 2020 ***Codechef*** platform.
- Secured **Global Rank 214** in **Codeforces Round 624.**
- Secured ***Global Rank 356*** in December Long Challenge 2020 on ***Codechef*** platform.
- Secured ***Global Rank 367*** in January Long Challenge 2020 on ***Codechef*** platform.
- Secured **Global Rank 662** in **Codeforces Round 617.**
- Secured ***Global Rank 790*** in ***Codeforces Round 540.***

EXTRA CURRICULAR ACTIVITIES

- Marketing Co-ordinator at ***ACES-ACM IIT Delhi***
- Executive at ***Entrepreneurship and Development Cell, IIT Delhi***
- Student Mentor for Course ***COL100 : Introduction to Computer Science***
- Team Head at ***Rendezvous*** 2017, 2018 and ***Tryst*** 2018 (cultural and tech fests at IIT Delhi, respectively)
- Member Debating Club, IIT Delhi
- Member Football Team, IIT Delhi