Aditya Senthilnathan

SENIOR UNDERGRADUATE STUDENT

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Education

Year	Degree/Board	Institution	CGPA/Percentage
2022	Dual Degree* in Computer Science and Engineering	IIT Delhi	8.351/10
2017	CBSE (Class XII)	Maharishi International Residential School, Sunguvarchathiram	95.2%
2015	ICSE (Class X)	Vikaasa School, Madurai	92.8%

*Dual Degree is an Integrated Bachelor's and Master's program

Research Experience

Version Oracle *Columbia University*

UNDERGRADUATE RESEARCHER (PROF. JUNFENG YANG) *Jul. 2021 - Present*

Translation Validation for LLVM IR *IIT Delhi*

UNDERGRADUATE RESEARCHER (PROF. SORAV BANSAL) *Jan. 2021 - Present*

Verification of optimized code in C libraries *IIT Delhi*

UNDERGRADUATE RESEARCHER (PROF. SORAV BANSAL) *Oct. 2020 - Dec. 2020*

- Verified optimized code in dietlibc by checking equivalence of unoptimized and optimized code of functions using CounterTV based Translation Validation tool
- Generated manual proofs of equivalence for programs using bisimulation relations to analyse reason for inability of CounterTV based tool to deduce certain proofs and suggested fixes

Fairness & Diversity in News Aggregators *IIT Delhi*

UNDERGRADUATE RESEARCHER (PROF. AADITESHWAR SETH) *Jun. 2019 - Dec. 2019*

- Analysed bias in coverage of articles in news aggregators by analyzing topic coverage using topic modelling algorithms such as LDA, HDP, etc.
- Implemented OnlineLDA to extract topics from incoming stream of documents scraped continually by a web scraper from various news media
- Improved performance of OnlineLDA by hyperparameter tuning, by 14% from the baseline model as measured by C_V topic coherence score

Exploring Object Detection Models for Low Light Environment *IIT Delhi*

UNDERGRADUATE RESEARCHER (PROF. M. BALAKRISHNAN) *Dec. 2018 - Feb. 2019*

- Explored various object detection models to detect pedestrians in low light conditions using near-infrared cameras
- Used various techniques for the collection and augmentation of data to prepare custom dataset of near-infrared images for the learning task
- Investigated the performance of various object detection models such as R-CNN, SSD, etc. on the learning task

Work Experience

Gartner Inc. *(Remote) Gurgaon, Haryana*

SOFTWARE DEVELOPER INTERN *May. 2021 - Jul. 2021*

- Designed and implemented a system for automated resolution of exceptions raised by Gartner employees on internal performance data
- Spearheaded the migration of the host team's codebase and workflow to Bitbucket and conducted training sessions for the team's developers

Platonia Labs *(Remote) Cambridge, UK*

SOFTWARE DEVELOPER INTERN *Apr. 2020 - Jul. 2020*

- Designed complete frontend of iOS client using React Native, Redux & JavaScript and ensured seamless integration of backend with the frontend
- Designed user flow and layout of several screens and developed numerous components from scratch for app's component library focusing on user-friendly and intuitive UI/UX

Teaching Experience

Operating Systems, NPTEL *IIT Delhi*

TEACHING ASSISTANT *Jun. 2018 - Mar. 2019*

- Managed and answered questions on discussion forum for a class of ~400 students; created weekly assignments and wrote assignment solutions

Scholastic Achievements

2017   **KVPY Fellowship,** Awarded by the Dept. of Science and Technology, Govt. of India

Skills

Programming	(proficient) C/C++, Python, (familiar) PostgreSQL, Prolog, Java, Javascript, Ocaml, VHDL, x86 Assembly, Bash, LaTeX
Frameworks	OpenMP, MPI, React Native, Redux, PyTorch, OpenCV, Git, OpenGL, Gensim, Gatsby
Platforms	AutoDesk Inventor, Xilinx ISE, Vivado Design Suite, Unity Game Engine, Linux

Relevant Coursework

Computer Science: Compiler Optimizations, Compiler Design, Programming Languages, Database Management Systems, Operating Systems, Parallel & Distributed Programming, Principles of AI, Analysis & Design of Algorithms, Computer Architecture, Digital Logic & System Design

Electrical Engg. and Physics: Signals & Systems, Principles of Electronic Materials, Electromagnetic Waves & Quantum Mechanics

Mathematics: Discrete Mathematical Structures, Linear Algebra, Probability & Stochastic Processes, Calculus, Differential Equations

Activities

PLDI 2021   *Remote*
Student Volunteer   *Jun. 2021*

Board of Student Publications (IIT-D)   *IIT Delhi*
Student Journalist   *Jun. 2018 - Mar. 2019*