Aditya **Senthilnathan**

JUNIOR UNDERGRADUATE STUDENT

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"Per Aspera Ad Astra"

Education

IIT-D (Indian Institute of Technology, Delhi)   *Delhi, India*
DUAL DEGREE (B.TECH + M.TECH) IN COMPUTER SCIENCE AND ENGINEERING   *Jun. 2017 - Present*
- CGPA at the end of five semesters: 8.03/10

Maharishi International Residential School   *Chennai, Tamil Nadu*
CLASS XII BOARD EXAMINATION (CBSE)   *Jun. 2015 - Mar. 2017*
- Scored 95.2/100
- Scored 100/100 in Computer Science

Honors & Awards

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

Academic Coursework

Machine Learning*, Computer Vision, Artificial Intelligence, Parallel and Distributed Systems*, Operating Systems*, Intro to Automata and Theory of Computation*, Optimization Methods and Application*, Ethical foundations for design and management of information systems*, Computer Networks, Programming Languages, Computer Architecture, Design Practices, Data Structures & Algorithms, Discrete Mathematics, Digital Logic, Prob. and Stochastic Processes, Linear Algebra and Differential Equations, Calculus, Signals and Systems, Principles of Electronic Materials

* - Expected to be completed by Summer 2020

Skills

Programming	C/C++, Python, Java, Ocaml, Matlab, VHDL, ARM Assembly, Shell Script, LaTeX, HTML, CSS, Javascript
Frameworks	OpenCV, Tensorflow, PyTorch, Git, OpenGL, Gensim, React Native
Platforms	AutoDesk Inventor, Xilinx ISE, Unity Game Engine, Linux
Languages	Tamil, English, Hindi

Experience

Undergraduate Research, ICTD Lab (Prof. Aaditeshwar Seth)   *IIT Delhi*
RESEARCHER FOR <ALGORITHMIC AUDITING OF NEWS FEEDS>   *Jun. 2019 - Dec. 2019*
- Analysed the problem of **bias in coverage of articles in news feeds** by algorithmic auditing of news feeds ensuring short term diversity and long term fairness in selection of articles to be displayed on news feeds
- Researched application of **topic modelling algorithms** like LDA, HDP, etc. to the problem of extracting high quality abstract topics from incoming stream of documents sourced from news media
- Improved performance of topic modeling algorithm by **15%** as measured by the C_V topic coherence score
- Abstract topics extracted by topic modelling algorithms were input to recommendation system which analysed topic coverage and ensured diversity and fairness in news feeds through various heuristics and distribution modelling techniques

Undergraduate Research, AssisTech Lab (Prof. M. Balakrishnan)   *IIT Delhi*
RESEARCHER FOR <DETECTING PEDESTRIANS IN LOW LIGHT CONDITIONS USING OBJECT DETECTION MODELS>   *Dec. 2018 - Feb. 2019*
- Explored the problem of **detection of pedestrians in low light conditions** through the use of near **infrared cameras** and **object detection models**
- Proposed various techniques for the collection and augmentation of data to prepare custom datasets for the learning task
- Investigated the performance of various object detection models like **R-CNN, SSD**, etc. on the learning task
- Proposed a method to build pedestrian recognition system robust to all lighting conditions especially low light

Technical Projects

Hand Gesture Classifier
IIT Delhi

Course Project, **Computer Vision**

- Designed custom **CNN model** with 5 layers using **PyTorch** to detect and classify hand gestures from the following classes: Stop, Next, Previous and Background Noise

Game Playing Agent
IIT Delhi

Course Project, Principles of **Artificial Intelligence**

- Designed agent based on **Artificial Intelligence techniques** to play Cannon, a perfect information, 2-player abstract strategy war game
- The agent was ranked among the **top 8 out of 60 other agents** in the tournaments held

Probabilistic Medical Diagnosis
IIT Delhi

Course Project, Principles of **Artificial Intelligence**

- Designed program to learn parameters for **Bayesian Network** with pre-defined structure that models inter-relationship between (some) diseases and observed symptoms

Prototype Messaging Application
IIT Delhi

Course Project, **Computer Networks**

- Designed **server and client application interfaces** to realize a social network which allows users to send encrypted messages to other users on the network

Functional Language Prototype
IIT Delhi

Course Project, **Programming Languages**

- Designed a **small functional programming language** with implementation of various components like lexer, parser, type checker, compiler, etc.

Search Engine Prototype
IIT Delhi

Course Project, **Data Structures and Algorithms**

- Implemented **basic search engine** based on inverted page index along with the use of hashmaps, term frequency and inverse document frequency to sort results in order of decreasing relevance

Extracurricular Activity

Updaters Group
IIT Delhi

Systems Administrator
Jun. 2019 - PRESENT

- Member of team of system adminstrators handling the systems architecture of CSE Dept. IIT Delhi

Board of Student Publications
IIT Delhi

Undergraduate Student Reporter
Jun. 2018 - Mar. 2019

- Had several articles on Science and Technology published in various student magazines like Inquirer, Inception, Elemental, etc.

Music

Electronic Keyboard

- Awarded Certificates of Merit by Trinity College London for Grades 1 through 5 for proficiency in the instrument of Electronic Keyboard