Ishaan Thakur

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Education

Cornell University, Ithaca, NY **Aug. 2018 – Dec. 2021**

M.Eng., B.S. *in Electrical & Computer Engineering | Computer Science Minor* **GPA: 3.7**

Relevant Courses: Algorithms, Systems Programming (TA), Deep Learning, Machine Learning, Computer Vision, Image Processing, Operating Systems, Networks, Data Structures, Applied Logic, Embedded Systems, Probability

Professional Experience

Chiang's Group, Cornell University Ithaca, NY

Graduate Researcher + Master's Thesis, Advisor: Prof. Hsiao-Dong Chiang **Sep. 2020 – Present**

- Conduct research on improving the accuracy of a dynamic global solver on an ensemble of Differential Evolution, Particle Swarm Optimization and Genetic Algorithms used for image / video-based object detection task.
- Achieved comparable performance against state-of-the-art solvers, with significantly lower complexity overhead.

On Pepper LLC New York, NY

Software Engineering Intern - Voice Experience Team **May 2020 – Aug. 2020**

- Implemented reference BI tool using NLP techniques such as sentence segmentation, POS tagging, dependency parsing and relation extraction, to gain insights on company's fund asset data.
- Developed a chatbot using React, DialogFlow and MongoDB that reduces average response time by 87%; ran its A/B tests on 1000+ users which recorded retention rate for voice search engagement.
- Improved and redesigned authentication service to allow integration with Auth0 for all employees and users for more secure requests, using JWT validation on the API gateway.

TestAIng Solutions Remote

Software Engineering Intern - Machine Learning Team **Jun. 2020 – Jul. 2020**

- Ideated and built a custom neural network architecture (CNN with BERT embeddings) in PyTorch, capable of performing slot filling and intent classification task on user search queries; improved accuracy by 25%.
- Developed an application that implements training, testing, cross validation and visualizes model interpretability (based on LIME and SHAP values) for 10+ classification methods with a unified interface.

ESnet, Lawrence Berkeley National Lab Berkeley, CA

Software Engineering Intern - Scientific Network Team **May 2019 – Aug. 2019**

- Built a network packet tracing dashboard capable of collecting service quality metrics, monitoring network security and allowing real time debugging on network packets, using Node, React and Cassandra.
- Improved High Touch Services for Network engineers using Node and React: Impact: Improved rendering speed by 10x; added support for 100 Gbps data transfer and packet features filtering.

Swarm Robotix LLC Naperville, IL

Software Engineering Intern - Sensor Software & Controls Team **May 2018 – Jul. 2018**

- Designed a localization system with Dynamic Window Approach for autonomous mobile robots in ROS using C++. Successfully improved collision detection and avoidance by 67%.

Project Highlights

Waymo Open Dataset Challenge **Apr. 2020 – May 2020**

- Trained a modified Cascade R-CNN on 600,000+ images, and improved the mAP scores of vehicles, cyclists and pedestrians by 40%, 25%, and 35% respectively.

Over-the-Air Radio Signal Classification **Apr. 2020 – May 2020**

- Implemented a 6-layer Residual Neural Network in PyTorch to classify time-series data, obtained from measuring signals with low-SNR, into one of 10 modulation types with 60% accuracy.

Weather Web App **Dec. 2019**

- Developed a RESTful web app in React using OpenWeatherMap API that displays the current weather information of the queried location, storing data with Firebase.

Technical Skills

Languages: Proficient: Java, C/C++, Python | Familiar: SQL, JavaScript, HTML, CSS, Go, Verilog, LaTeX

Tools + Frameworks: MongoDB, MySQL, Node.js, React, Express, Data/ML/NLP Python Libraries, Docker, Git

Honors & Involvement

Honors: Dean's List • 2nd Place, Cornell Robotics Competition (2019) • 1st Place, ECE Design Competition (2018)

Involvement: Research Assistant, Autonomous Systems Lab • Researh Member, WaggleNet • CS 4414 (Systems Programming) Staff • Outreach, ACSU • Member, IEEE