Arya Kumar

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Education

University of Michigan Ann Arbor, Michigan
BSE in Computer Science - GPA: 4.00; Dean's List, Angell Scholar *Expected May 2022*
Courses: Data Structures and Algorithms; Discrete Math; Multivariable Calculus; Linear Algebra; Intro Prob. Theory

Experience

BAE Systems Burlington, MA
SWE Intern *Jun 2019 - Aug 2019*

- **Aerial Imagery Detection**: Developed a tool to aggregate machine learning, Bayesian, and model based identification of points of interest in aerial imagery.
- **IR-based heart rate detection**: Instrumented development on an internal project attempting to use IR imagery to determine heart rate of individuals from longer distances.

Siemplify Tel Aviv, Israel
Machine Learning Intern *Jan 2018 - Jun 2019*

- **Data Ingesting**: Built machine learning pipelines to ingest data and improve threat analysis, using Keras and other industry tools
- **Extensions**: Built several Extensions, available on Siemplify's marketplace, actively being used in the security systems of Fortune 500 companies.

Projects

Bridge: Cofounder at startup aiming to redesign virtual career fairs through anonymous feedback, and a novel card-based interaction. Work on backend team working in FastAPI and PostgreSQL. *(June 2020 - Current)*
Latticode: Web application built in React and Rust, to help teach intermediate programming (data structures and algorithms) through building 2D board games. *(June 2020 - Current)*
Lifting iOS App: iOS app built in SwiftUI and Swift to help me track my exercising progress. *(Jul 2020 - Aug 2020)*

Awards

Sonos Design Challenge
1st place *September 2019*
Demonstrated proof of concept for a music recommendation engine that blended the tastes of users coexisting in spaces. Built technical demonstration with pytorch and HTML/CSS, and crafted video submission.

PennApps XX
3rd place, Best Open Source Contribution, and Hackers Choice Award *September 2019*
Created ImpromPPTX, a tool to automatically generate presentation slides based on words spoken into a clicker, in real time. It is capable of summarizing text and adding relevant images and graphs based on spoken words. Built with Django and HTML/CSS, with ML models built with FastText and Pytorch.

VTHacks 2019
1st place + Category Awards *March 2019*
Created Electromotivated, a computer vision based website, to automatically parse and analyze hand drawn circuits. Built with Django and HTML/CSS, with computer vision models built in OpenCV, numpy and scikit-learn.

Publications

(Upcoming) Analyzing Content Popularity with Attention-based NLP models: Analyzes the who, what and whys behind Reddit post popularity. Proposes a novel attention+CNN based model, with a focus on interpret-ability. Work with Prof. Paramveer Dhillon at UofM's School of Information.
Using Reinforcement Learning for Real-Time Trajectory Planning of Aerial Multi Agent Systems: Developed reinforcement learning algorithms to control a swarm of rescue drones navigating buildings in real time.
Standoff Heart Rate Estimation from Video: Published April 2020 at SPIE Defense + Commercial Sensing conference. Analysed the use of signal processing based methods for remote heart rate detection.

Activities

Ballroom Dance: Compete in national ballroom dance competitions through UofM's Ballroom Dance Team.

Programming Skills

Languages: Python, C++, Rust, Javascript, SQL **Technologies**: Pytorch, AWS, SwiftUI, Docker, FastAPI