Anand Sunderrajan

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Technical Skills

Programming Languages — Assembly (LC3, x86), C, C++, C for CUDA, HTML/CSS, Node-Red, Python, SystemVerilog, SQL
Tools/Frameworks — Adobe Suite, AWS, EAGLE, Git, Google Cloud (GCP), Jetbrains Suite, Jupyter, Keras, KiCad, LaTeX, Linux, Microsoft Office Suite, NLTK, PyTorch, Quartus, sklearn (scikit-learn), TensorFlow
Human Languages — English (Fluent), Hindi (Fluent), Spanish (Basic)

Education

Udacity **June 2021 - Present**
AWS Machine Learning Foundations
University of Illinois Urbana Champaign **August 2017 - June 2021**
Bachelor of Science in Computer Engineering

Experience

University of Illinois Urbana-Champaign **January 2021 – June 2021**
Teaching Assistant – ECE445 (Senior Design)

Lead and managed multiple project teams through the engineering design process – including design review, testing, demonstration, and professional documentation of each step. Created and presented course lectures. Coordinated 400+ students alongside course staff for technical and design assistance. Liaised with company representatives for sponsored projects.

University of Illinois Urbana-Champaign **August 2020 – June 2021**
Teaching Assistant - ECE385 (Digital System Design)

Guided students in laboratory experiments involving FPGA design (over 250 students each semester). Conducted office hours for students to resolve their queries; test and debug their designs; and further their understanding of digital systems design.

Hendrick House **May 2018 - June 2019**
Receptionist September 2018 - June 2019
Resident Advisor May 2018 - September 2018

Collaborated with a team of 6 Resident Advisors to establish a united leadership team to oversee over 1600 residents of varying age groups. Addressed resident issues and concerns in a professional and timely manner. Maintained a database of services used by residents and sold to visitors. Created accurate and detailed reports for each shift.

International School of Havana **October 2016 - May 2017**
Software Development and Infrastructure Intern

Created a python program to maintain a database for over 700 students and assist in data management for various categories for each student. Assisted in the implementation of the IT infrastructure (∼$45,000) for the new campus built on Calle 21.

UNICEF - Havana, Cuba **May 2016 - September 2016**
Software Development Intern
Developed a python program for maintaining an expense database which allowed users to efficiently parse through 8 funding accounts and visualize 11 different expense categories locally.

Projects

Automated Trading Bot
Python, Pandas, PyTorch, NLTK, scikit-learn (sklearn), Google Cloud Platform (GCP), Polygon, PRAW, Stocktwits

Algorithmic trading bot in Python that conducts financial and sentiment analysis for tickers on high traffic sub-reddits and stock tweets using various APIs (Polygon, PRAW, Stocktwits). The custom multi-model pipeline achieved an alpha of 4.94 (compared to the SP500), a beta of 0.73, and Sharpe Ratio of 1.68 providing an average annual return of approximately 15.04% through back testing with data since 2003 compared to the $\sim$ 10.1% provided by the SP500. Testing with actual funds in a brokerage account since Jan 2020 has resulted in a portfolio value increase of $\sim$ 1360%.

Event Attendance Tracker – Team 13 (Fall 2020) **View Project**
C, Java, EAGLE, KiCad, Soldering, PCB Design

Project for ECE 445, the capstone course for the ECE department at UIUC. Created a custom-designed PCB containing an ESP-32 micro-controller programmed in C, and created an android application in Java to develop a comprehensive system that tracks event attendees at a booth. Developed a custom distance determining algorithm that achieves an accuracy of 99.04% in determining the booths attended, a >35% increase over tested alternatives.

Pipelined LC3-b Microprocessor View Project

System Verilog, FPGA Development, Quartus Prime, LaTeX

A pipelined version of the LC3-B Microprocessor with features such as cache, branch prediction etc. Pipelined version built as a final project for ECE385 (Digital Systems Laboratory) with additional features added subsequently.

Object Detection System View Project

Python, TensorFlow, NumPy, Pandas

An object detection and classification pipeline built in Python using TensorFlow. The model is trained using the Fashion-MNIST dataset, built using two separate frameworks - Keras and Low-Level APIs, achieving an accuracy of 92% and 89.7% respectively.

Awards

Dean's List **2020**

Grainger College of Engineering, University of Illinois Urbana-Champaign.

T.E.A.M University Challenge (Portfolio Management) **Fall 2020**

1st - University of Illinois Urbana-Champaign. 11th - Nationwide.

Best Engineered Design and Project **Fall 2020**

ECE 445 (Senior Design), University of Illinois Urbana-Champaign.

Overwatch Collegiate Cup **Spring 2021**

Illini Esports, 8th out of 512 teams.

Overwatch TESPA Collegiate Tournament **Fall 2020**

Illini Esports, 14th out of 1022 teams.

Overwatch Collegiate Esports National Championship **Spring 2021**

Illini Esports, 5th out of 16 teams.

Kaggle Competitions

Google Brain - Ventilator Pressure Prediction View Competition

Bronze Medal Finish. Ranked 221/2605. Feature engineering alongside an LSTM model utilizing MAE loss to develop a method for controlling mechanical ventilators on sedated patient lungs.

Optiver Realized Volatility Challenge View Competition

Ongoing competition. Current rank 180/3305. Feature engineering alongside a multi-model pipeline (using XGBoost, LGBM and NNs) to predict short-term future volatility of hundreds of stocks across different sectors.

CommonLit Readability Prize View Competition

Ranked 365/3633 (∼Top 10% finish). Created a multi model pipeline (using RoBERTa, XLNet, ALBERT, and more, alongside a custom loss function) to rate the complexity of reading passages for grade 3-12.

SIIM-FISABIO-RSNA COVID-19 Detection View Competition

Ranked 190/1305 (∼Top 14% finish). Ensemble of Yolov5 and Efficient-net to identify/localize COVID-19 abnormalities on chest radiographs.

Related Coursework

CS225: Introduction to Data Structures and Algorithms with C++ **Grade: A-**

Experience with programming in C++ and using various data structures and algorithms.

ECE385: Digital Systems Laboratory **Grade: A**

Experience designing and building digital systems using transistor-transistor logic, SystemVerilog, and field-programmable gate arrays.

ECE408: Applied Parallel Programming **Grade: A-**

Experience with programming a massively parallel GPU system using CUDA, and with CUDA based convolutional networks.

ECE445: Senior Design **Grade: A+**

Experience with project management, collaboration, and circuit design. Experience creating android apps and PCBs.

CS498DL: Deep Learning **Grade: A+**

Experience with linear classifiers, multi-layer neural networks, computer vision and reinforcement learning

ECE498ICC: IoT and Cognitive Computing **Grade: B+**

Experience with CNN creation using Keras and Low-Level APIs. Experience using Node-RED, GPUs, Edge devices, Cloud devices.