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 **July 2021 - December 2021**
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.
- Assessed project documentation and presentations. Created and presented lectures. Coordinated over 400 students alongside course staff for technical and design assistance.
- Conducted weekly meetings with teams to assess progress, and resolve issues.

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 system 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 various age groups and address resident issues and concerns in a professional and timely manner.
- Maintained a database of services used and sold to visitors.

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 technical and sentiment analysis for tickers on high traffic sub-reddits and twitter using various APIs (Polygon, PRAW, Stocktwits).
- Custom multi-model pipeline achieved an alpha of 4.94 (compared to the SP500), a beta of 1.07. Provides an average annual return of approximately 15.04% through back testing with data since 2003 compared to the ∼10.1% provided by the SP500.
- Testing with funds in a brokerage account since Jan 2020 resulted in a portfolio growth of ∼1360%.

Event Attendance Tracker – Team 13 (Fall 2020) View Project

C, Java, EAGLE, KiCad, Soldering, PCB Design

- Created a custom-designed PCB containing an ESP- 32 micro controller programmed in C, and 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 booths attended, a >35% increase over tested alternatives.
- Overall solution results in a product that is ∼95% cheaper than current market competitors.

Pipelined Microprocessors View Project

System Verilog, FPGA Development, Quartus Prime

- Designed a pipelined version of the LC3-b microprocessor with features such as cache, branch prediction, hazard detection, etc.
- Designed a pipelined version of the RISC-V microprocessor based on the RV32I ISA with cache and hazard detection.

Overwatch Object Tracking

Python, OpenCV, PyTorch

- Ongoing project to develop an object (character) tracker for Overwatch, that can be extended to other FPS games in the future.
- Utilizes a model trained on a custom dataset for object recognition alongside an HID emulated mouse to accurately detect and aim at opponents.

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 TESPA Collegiate Tournament **Fall 2020**

Illini Esports, 14th out of 1022 teams.

Overwatch Collegiate Cup **Spring 2021**

Illini Esports, 8th out of 512 teams.

Overwatch Collegiate Esports National Championship **Spring 2021**

Illini Esports, 5th out of 16 teams.

Kaggle Competitions

Kaggle Competitions Expert (Ranked 837 Globally)

Feedback Prize - Evaluating Student Writing View Competition

Bronze medal finish. Current rank 171/2058.

Finetuned models (RoBERTa, DeBERTa, and funnel transformer) alongside pseudolabelled data to automatically segment texts and classify argumentative and rhetorical elements in essays.

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 the lungs of sedated patients.

PetFinder.my - Pawpularity Contest View Competition

Bronze medal finish. Ranked 313/3537.

Created a multi model pipeline using transfer learning on efficientnet, and an image regression model (swin transformer) to predict the 'Pawpularity' of pet photos for adoption shelters.

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.