

# Anand Sunderrajan

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🌐 [AnandSunderrajan.github.io](https://AnandSunderrajan.github.io) — [k Kaggle/AnandSunderrajan](https://kaggle.com/AnandSunderrajan)

## 📦 Technical Skills

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**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

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**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

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**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

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### 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

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### 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 TESSA 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

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Kaggle Competitions Expert (Ranked 801 Globally)

### Feedback Prize - Evaluating Student Writing

[View Competition](#)

Bronze medal finish. Ranked 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.

### U.S. Patent Phrase to Phrase Matching

[View Competition](#)

Ongoing competition. Currently ranked 30/1478.

Developing a model to extract relevant information by matching key phrases and subsequently determining the semantic similarity between patent documents.

### 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.