

Alex Yuan

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EDUCATION

2132 Amanda Mae Ct. Tallahassee, FL 32312

Yale University

Aug 2021 – Exp. May 2025

Pursuing B.S./M.S. in Computer Science and B.A. in Economics, GPA: 3.9/4.0

New Haven, CT

- Relevant Coursework: Data Structures, Systems Programming and Computer Organization, Algorithms, Object-Oriented Programming, Human-Computer Interaction, Full Stack Web Programming, Database Design and Implementation, Distributed Systems, Computational Intelligence, Discrete Mathematics, Advanced Data Analysis and Econometrics, Microeconomics, Macroeconomics, Game Theory

EXPERIENCE

NASA - National Aeronautics and Space Administration

June 2023 – Present

Hardware and Software Development Intern

Hampton, VA

- Develop app in C/C++ that monitors an autonomous drone's lithium-ion battery health, enabling preemptive decision making and dynamically adjusting its flight plan to ensure a safe descent as part of the Safety-Critical Avionics Systems Team.
- Follow formal software development process to produce pedigree for NASA's Class C safety-critical flight approval (includes Traceable Requirements, UML Design Documentation, Static Analysis, Unit Test Development, and Integrated Systems Tests).

Yale Social Robotics Lab

May 2022 – Feb 2023

Research Fellow

New Haven, CT

- Supported the design of Ommie, a novel robot that provides at-home support for people with anxiety to practice deep breathing.
- Utilized Robot Operating System (ROS) and Python to integrate motor movement and sensors (IMU, Thermal and RGB Camera, Respiration Belt, Radar) within Ommie for data collection – first of its kind publicly available.
- Built and developed CNN, LSTM, and GRU machine learning models for respiration phase recognition.

Yale School of the Environment

Feb 2022 – May 2022

James Tobin Research Assistant

New Haven, CT

- Implemented an image recognition algorithm to automate the extraction of over 7 million entries of Kenyan population and migration data from scanned documents and images.
- Created shapefiles by merging this data with existing satellite data and built a CNN model in R to measure the impact of resettlement on economic, demographic, and environmental health outcomes.

Florida State University Department of Computer Science

Mar 2019 – Jan 2021

Research Assistant

Tallahassee, FL

- Developed Python deep learning models to predict "Freezing of Gait" (FOG) in Parkinson's patients by analyzing patient motion data from the Daphnet FOG dataset, a public domain dataset.
- The work was published (<https://ieeexplore.ieee.org/document/9356329>) and presented at the IEEE International Conference on Machine Learning and Applications, December 14-17, 2020, Miami, Florida with 300+ citations and views.

PROJECTS

Deep Learning to Predict Freezing of Gait in Patients with Parkinson's Disease | Machine Learning

- Utilized Tensorflow and Keras in Python to build several Recurrent Neural Networks (LSTM, SimpleRNN, GRU).
- Supported regular training and two transfer learning methods as well as command options to set neural network hyperparameters.
- Achieved a 95% accuracy rate at predicting Freezing of Gait in Patients with Parkinson's Disease by analyzing patient motion data.

Yost and Yound (An Application for Yale Students) | Full-Stack Web Development

- Developed and deployed a full-stack web application that facilitates the returning of lost/found objects to their rightful owners.
- Allows users to login with Central Authentication Services, post lost/found items, dynamically search items, and message others.
- Utilized Jinja, HTML, CSS, JavaScript, and JQuery for front-end and Python-Flask, Sqlite3, and SQLAlchemy for back-end.

The Shell | Systems Programming

- Designed the backend logic for the "Bash" Unix shell program using the fork/execvp model in C.
- Provided functionality for file redirection, pipelines, conditionals, backgrounding, subcommands, and reaping zombie processes.
- Implemented the functionality for the Unix built-in commands pushd and popd by utilizing a Stack data structure.

EXTRACURRICULAR ACTIVITIES

Yale Men's Water Polo Team

Aug 2021 – Present

Team Member

New Haven, CT

- Competed as an Attacker to help the Bulldogs achieve a 4th place finish at the New England Water Polo Conference Champs.

HONORS & AWARDS

USA Computing Olympiad (USACO) Gold Level Qualifier

Feb 2021

2x American Invitational Mathematics Examination (AIME) Qualifier

Mar 2019, Mar 2020

US Congressional App Challenge Winner

Jan 2020

SKILLS

C, Java, Python, R, C++, Flask, Node.js, HTML, CSS, JavaScript, JQuery, SQL, Git, Unix, Windows, ROS, Racket