Alex Yuan

+1 (850) 294-4089
alex.yuan@yale.edu
https://alexyuan66.github.io
2132 Amanda Mae Ct. Tallahassee, FL 32312

EDUCATION

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

National Aeronautics and Space Administration (NASA)   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, dynamically adjusting its flight plan accordingly as part of the Safety-Critical Avionics Systems Team.
- Ensure app functionality follows NASA's Class C: Mission Support Software or Aeronautic Vehicles safety guidelines.

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
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 ACTIVITES

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