Ronan Buck

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EDUCATION

University of Central Florida Graduation Date: May 2026

Bachelor of Science in Computer Science, Minor in Intelligent Robotics Systems *Cumulative GPA: 3.99*

Member of the Burnett Honors College

Relevant Coursework: Data Structures and Algorithms II, Objected Oriented Programming, Discrete Structures, Systems Software, Security in Computing, Matrix and Linear Algebra

EXPERIENCE

Undergraduate Research Assistant (Future Data Lab) March 2024 - Present

University of Central Florida *Orlando, FL*

- Designed and utilized Graph Neural Networks to predict on Ethereum and Blockchain dynamic graph datasets
- Employed Network-Based methods to organize graph data, facilitating Topological Data Analysis using Python libraries including Pandas and Networkx, using applied mathematics for further comprehension
- Currently writing a survey paper on the development, applications, and the future of Graph Neural Networks

Teaching Assistant August 2024 - Present

University of Central Florida *Orlando, FL*

- Assisting Masters of Science in Fintech students with various Python programming problems in the course Computational Methods in Fintech
- Quickly responding and assisting students so that they can complete their coursework in a timely manner

PROJECTS

F1Tenth UCF Autonomous Racing Team | *Computer Vision, Machine Learning*

University of Central Florida

- Developing an autonomous racing robot using ROS, integrating perception, planning, control subsystems
- Employing PyTorch Convolutional Neural Networks, Probabilistic Roadmaps, and the YOLO architecture for motion planning, combining visual and LiDAR data for object detection
- Authored a technical guide for configuring Ubuntu on WSL for project setup

Continuous Temporal Graph Foundation Model | *Python, Applied Mathematics, Graph Theory*

Undergraduate Research Assistant

- Collaborate on designing the first-ever Temporal Graph Neural Network Foundational Model designed to reconstruct continuous-time dynamic graph data using PyTorch and Networkx libraries
- Utilizing a LSTM-GRU Neural Network to predict graph features through Multi-Target Regression
- Researching and testing novel methods of graph reconstruction including Neural Networks, Local Search, and Reinforcement Learning

DOTA 2 Match Prediction | *Python, Machine Learning, REST API's, Front End*

Personal Project

- Developed a Tensorflow machine learning model to predict outcomes of high-ranking DOTA 2 matches, achieving ~80% AUC-ROC
- Utilized REST API calls and GraphQL queries to compile a personal dataset from ranked matches
- Formed and cleaned the dataset with SQLite3 and Pandas for regression and classification tasks
- Created an interactive website using HTML, CSS, JavaScript, and Flask to deploy the model for user testing

Rocket Control Panel | *Python, Arduino, QuestDB, TCP*

Knight's Experimental Rocketry (UCF)

- Developed a fully configurable control system for two distinct rocket teams using an STM32 microcontroller
- Implemented real-time monitoring of sensor data via TCP, with simultaneous data transmission to QuestDB
- Collaborated with team leads to define necessary controls and safety protocols for testing and launches
- Assisted with rocket tests, ensuring adherence to safety protocols and system functionality

TECHNICAL SKILLS

Languages: Python, C++, Java, SQL, C, Bash, Dart, HTML, CSS, Javascript

Frameworks: PyTorch, Tensorflow, Scikit-learn, Keras, Hugging Face Transformers, REACT

Developer Tools: Git, VS Code, Jupyter Notebook, IntelliJ IDEA, Arduino IDE, Docker, Flask, Firebase

Libraries: Pandas, Numpy, Matplotlib, Networkx, Requests, Scipy