

Benjamin David Roberson

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EDUCATION

University of Tennessee, Knoxville

Master of Science in Computer Science

Machine Learning concentration | GPA: 3.42

Aug 2019 – Aug 2023

Bachelor of Science in Computer Science

Minor in Physics | GPA: 3.17

Aug 2013 – Dec 2018

WORK EXPERIENCE

Oak Ridge National Laboratory: Research Intern

May 2024 – Aug 2024

- Work with a team studying atmospheric and environmental data (ARM)
- Train a Large Language Model to predict metadata (e.g. authors, locations) for scientific datasets
- Automate metadata production so that researchers can more easily share data

Oak Ridge National Laboratory: Research Intern

Jan 2024 – Apr 2024

- Work with a research team using reinforcement learning agents to improve cybersecurity of networks
- Run simulations of RL agents in a custom environment using RLlib and stable baselines
- Research and run RL simulations from a variety of authors to compare and contrast their effectiveness
- Determined that many environments were of low quality, justifying work on a new, improved environment

Siemens Healthineers: Full Stack Web Developer

Jun 2022 – Dec 2023

- Full Stack development on a web-based dashboard of charts showing development team's status
- Client side based in Angular/TypeScript:
 - Removed an unmaintained design system and replaced it with an open source one, PrimeNG
 - Improved user interface experience by adding features
- Server side based in C#:
 - Fully rewrote a deprecated library to make use of a RESTful API
 - Created additional data metrics to display on the dashboard

UTK: Graduate Teaching Assistant

Aug 2022 – Dec 2022

- Course: Foundations of Computer Science, CS580
- Create, assign, and grade homework for students
- Assist in teaching lectures
- Answer questions and provide support for students

UTK Office of Information Technology: Systems Administrator

Jan 2020 – Dec 2020

- Linux system administration, installation, updates, problem solving
- Web server performance analysis and web server administration
- Provide support for several public servers

UTK: Research Assistant; Magnetic Fields physics Simulation

Feb 2015 – Feb 2016

- Simulated magnetic fields from current-carrying wires, for a neutron beam experiment testing a dark matter candidate called mirror matter
- Goal of creating a uniform field within the beam path
- Successfully found a configuration of wires that produced this uniform field

NIMBioS: Summer REU

Jun 2014 – Aug 2014

- Group project involving mathematical modeling and prediction of facial expressions
 - Developed a program to present a game and collect data from participants in psychological study
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SKILLS

Software

- C/C++: STL, Data structures & Algorithms, Multi-threading, System calls
- C#: .NET Framework, Visual Studio, HTTP methods
- Python: Libraries and data types, Scripting, Machine learning
- Java: GUIs, Model-view-controller design
- Miscellaneous: Command utilities/ Bash, Linux, Git, Agile methodology, Unit testing

Web Development

- Front end: Angular Framework, JavaScript, DOM manipulation, Ajax, JQuery, CSS
- Back end: C#, PHP, SQL/MySQL, Get and post requests, Database interaction
- Sysadmin: Apache, HTTP server configuration, .htaccess, SSL certificates

Machine Learning / Data Science

- Data cleaning: Pruning, Dimensionality reduction, PCA
- ML Models: Neural network, SVM, Decision tree, Clustering, Convolutional network, Autoencoder, Reinforcement Learning, Deep Learning
- Probability: Bayesian methods, Random variables

Physics & Mathematics

- Physics: Astronomy, Modern physics, Nuclear, Electricity & Magnetism, Scientific computing
- Mathematics: Linear algebra, Differential equations, Discrete math, Numerical analysis

CAMPUS INVOLVEMENT

IEEE Robotics – Robot competition member

- Circuits construction, Arduino programming, Raspberry Pi
- Built a personal robot for sumobot competition
 - Designed to push an opponent robot out of the arena before being pushed out myself

HackUTK – Cybersecurity organization

Society of Physics Students – Undergraduate physics organization

- Host demos of physics concepts for the public in downtown Knoxville
- Travel to and attend conferences

AWARDS

VolHacks – UT hosted hackathon events

- [2019 “Most Innovative” prize winning project](#)
- Solved the game “Flappy Bird” using a genetic algorithm-based AI

Eagle Scout Award

UTK Chancellor’s Honors program

Hope scholarship with merit supplement and UTK Engineering scholarships