Marco E. Jonsson

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Education

Trinity University **2021-present**

B.S in Physics | B.S in Computer Science | Minor in Mathematics

Technical Skills and Programming Languages

Python | C | Scala | MATLAB | HTML | JavaScript | Haskell | LaTeX | Docker | TensorFlow
MS Excel | SQL | Android App Development | Arduino Robotics and Circuitry | Mathematical modeling | Technical writing | AutoDesk Fusion 360 | CNC machining | Science Communication

Special Skills, Awards, and Extracurriculars

Semmes Endowed Full-Tuition Scholar | English/Spanish Bilingual | Garnett G. Gray Physics Award | Wagner Senior Physics Award | Varsity Track and Cross Country | Varsity Ultimate Frisbee | TSO Concertmaster | First Prize, 23-24 TSO Concerto Competition (violin).

Professional Experience and Coding Projects

❖ **Vedo Systems – Software and Machine-Learning Intern** **Summer 2024**

Worked on Whetstone, a ML-based fault detection software through a NASA contract.
Major work areas: Simulation | Data Analysis | Web Development | ML Model Optimization | Regression Testing | Technical Documentation.

- Adapted ML algorithms to produce increases from 15% to 85% in accuracy on test data
- Produced 18 page technical report for client-facing model analysis
- Expanded the orbital simulation to create advanced regression test data.
- Contributed various features to a major release, v1.1 and a minor release, v1.1.1

❖ **Physics Research – Fluid Dynamics** **Summer 2023 | Current Honors Thesis**

Designed and constructed a Taylor-Couette vortex generator for fluid dynamics experimentation and presented at an Undergraduate Research Symposium. Continued work in analysis of fluid flow bifurcation for Biophysics Simulation parameter extraction.

- Constructed bespoke circuitry to interface old motors to reduce costs
- Created software to apply FFT to normalized fluid data.

❖ **Physics Research – Photosynthetic Optimization** **Fall 2023**

Investigated effects of dynamic parameter adjustment on photosynthetic energy production rates

- Reproduced models to reproduce experimental data to within 3%
- Extrapolated predictions for solar temperature based photosynthetic energy deltas.

❖ **Haskell Chess Engine and AI** **Fall 2023**

Worked with a team of 5 to develop a fully interactive chess game engine with AI opponent functionality using the Haskell programming language.

- Implemented alpha-beta pruning algorithms to improve performance by 300+%
- Implemented dynamic depth calculations to increase accessible depth in endgame play.