Marco Jonsson |Houston, Texas
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EDUCATION

Trinity University San Antonio, TX | May 2025
Bachelor of Science in Computer Science | Bachelor of Science in Physics | Minor in Mathematics GPA: 3.65
Semmes Endowed Full-Tuition Scholar | Garnett G. Gray Physics Award | Wagner Senior Physics Award
Honors Thesis: "From Stability to Turbulence: A Mechanical and Computational Study of Taylor-Couette Flow."
Relevant Coursework:
Computer Science: Artificial Intelligence | Software Engineering | Database Systems | Mobile App Development | Network Security | Functional Programming | Computer Design | Data Structures and Algorithms
Physics: Mechanics | Electromagnetism | Modern Physics | Quantum Physics 1, 2 | Classical Mechanics | Nonlinear Dynamics | Statistical Mechanics | Waves and Optics | Electromagnetic Fields | Electronics
Math: Calculus 1, 2, 3 | Linear Algebra | Differential Equations | Mathematical Methods | Real Analysis

TECHNICAL SKILLS

Programming Languages: Python, C/C++, Scala, Haskell, MATLAB, JavaScript, HTML/CSS, LaTeX.
Specialized Software, Frameworks, and Libraries: Google Test/GoogleMock, AutoDesk Fusion, TensorFlow Lite, Docker, Git/GitLab, NASA Koviz.
Web Frameworks: Flask, Axios, React.
Databases: SQL (MySQL), NoSQL (MongoDB).
Related Skills: Unit Testing, Code Analysis, Simulation Engineering, Web Development, Technical Writing, Mathematical Modeling, Arduino Robotics/Circuitry, CNC Machining.
Spoken Languages: English and Spanish native speaker.

PROFESSIONAL EXPERIENCE

Flight Software Engineer May 2025 – Present
NASA - Artemis II FSW team *Houston, Texas*
- Performed high criticality **software testing and integration** for Artemis II mission.
- Confirmed and completed **V&V criteria checks** for human-certified mission software.
- Produced detailed **bug and defect analysis** in legacy code written in **Embedded MATLAB/Simulink C++**.
- Wrote **functional, structural, and coverage-based testing** code for 40 modules, in excess of **25,000 LOC**.

Technical Skills & Tools: C++, MATLAB, Python, System Design, Software Validation, Technical Documentation

Software and Machine-Learning Intern May 2024 – August 2024
Vedo Systems *Houston,Texas*
- Contributed to ***Whetstone***, an ML-based fault detection software for a **NASA contract**.
- Improved ML model accuracy from **15% to 85%** through algorithm optimization.
- Developed an **18-page technical report** for client-facing model analysis.
- Expanded **orbital simulation** to enhance regression testing capabilities.
- Added new features to **major software release v1.1 and minor update v1.1.1**.

Technical Skills & Tools: Python, TFLite, JavaScript, SQL, Docker, Git, LaTeX.

Researcher – Fluid Dynamics and Engineering January 2023 – August 2023 | August 2024 – Present
Trinity University Department of Physics and Astronomy *San Antonio, Texas*
- **Designed and built** a **Taylor-Couette vortex generator** for fluid dynamics experimentation.
- **Presented** design and construction process at **TU Undergraduate Research Symposium.**
- Developed **custom circuitry** to interface with salvaged motors.
- Created software to apply **FFT (Fast Fourier Transform)** to optical fluid data for flow bifurcation analysis.

Technical Skills & Tools: Autodesk Fusion, C, Arduino, Circuit Design, MATLAB, LaTeX.

PROJECT EXPERIENCE

2-D Ray Tracing in C – Github Repository Spring 2025
Independent Project
- Developed a **custom 2D ray tracing engine** in C with SDL2 to simulate light propagation, occlusion, specular reflection, surface-based reflection, and dispersion.
- Optimized rendering algorithms for **efficient real-time ray calculations** for up to 10,000 rays.
- Implemented **vector math and collision detection** for rendered bodies.

- Designed a **modular codebase**, permitting expansion with new object shapes and light behavior.

Chess Engine and AI – Github Repository Fall 2023
Collaborative Project
- Collaborated with a team of five using Haskell to develop a **fully-interactive chess engine** and an **AI opponent.**
- Implemented **decision-tree pruning**, improving move evaluation **performance by 300%**.
- Designed **dynamic depth calculations**, enhancing AI decision-making abilities in **endgame scenarios**.

Miscellaneous Class Projects and Programming Contributions Fall 2021 – Present
- Fantasy Football Site and Predictor: **Flask Web App** with ESPN **web scraping parser**, mass data processing
- Kennel Management Software: **Node Web App** with **MongoDB** for Kennel Management.
- Scala Space Game: Interactive game using **JFX libraries**, rewinding time functionality, dynamic enemy behavior.