

Mason Bane

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Summary: Computer Science student (Computer Engineering) targeting embedded firmware and hardware/software integration roles. Proficient in microcontroller programming, low-level C/C++ and ARM Assembly, and circuit design. Strong mathematical/analytical skills with research experience.

EDUCATION

Tarleton State University

Stephenville, TX

Bachelor of Science in Computer Science, Concentration in Computer Engineering Aug. 2022 – May 2026 (Expected)

Minor in Mathematics

GPA: 3.94/4.00 (Institutional) — Cumulative: 3.75/4.00

Hill College

Hillsboro, TX

Associate of Arts in Liberal Arts

Aug. 2019 – Sept. 2023

EXPERIENCE

Undergraduate Research Assistant

May 2024 – Present

Tarleton State University

Stephenville, TX

- Contributed to the development and optimization of various N-Body simulations utilizing C/C++, enhancing computational efficiency and accuracy through advanced algorithms and parallel processing with CUDA.
- Collaborated with interdisciplinary teams to create digital twins to model complex problems using OpenGL and Blender, translating scientific concepts into interactive simulations and improving data interpretation.
- Conducted rigorous testing and debugging of simulation software, ensuring robust performance and reliability while documenting processes to facilitate knowledge transfer and future research initiatives.

Undergraduate Technology Specialist

Aug. 2024 – Present

Tarleton State University

Stephenville, TX

- Managed and maintained 15 devices in a high-performance computer lab dedicated to research initiatives
- Performed system updates, hardware maintenance, and technical support, resolving issues promptly to minimize downtime and maintain optimal performance.
- Maintained a clean and organized lab environment, promoting a collaborative workspace that fosters innovation and productivity.

PROJECTS

N-body Digital Twin of the Left Atrium | C/C++, CUDA, OpenGL, Blender, Bash

Aug. 2024 – Present

- Developed a CUDA-accelerated N-body model of the left atrium to simulate chaotic atrial arrhythmias, integrating anatomical data to explore potential treatments for atrial fibrillation.
- Built an interactive GUI using ImGui to streamline parameter adjustment and visualization, making the complex simulation accessible to a broader, non-technical audience.
- Presented findings at academic conferences, demonstrating the tool's potential to improve clinical decision-making and transform training for medical professionals.

Analog Pink Noise Generator Circuit | LTSpice, Python, MATLAB, Breadboarding

Aug. 2025 – Dec. 2025

- Designed and prototyped a BJT-based pink noise generator with active filter stage using LTSpice for simulation and breadboarding for physical implementation.
- Developed Python scripts to quantitatively compare simulation results with an ideal pink noise spectrum, guiding component selection and filter tuning for improved accuracy.
- Built a physical demonstration circuit with audio output, successfully verifying simulation models against real-world performance.
- Collaborated in a two-person team to present comprehensive design methodology, results, and data-driven decision process to peers and professors.

TECHNICAL SKILLS

Programming Languages: C/C++, Python, Java, ARM Assembly, Bash

Embedded & Hardware: TIVA-C Series (TM4C), Arduino, Raspberry Pi, GPIO

Simulation & Design Tools: LTSpice, MATLAB, Blender

Systems & Development: Git/GitHub, Linux, Visual Studio, VS Code, Make/CMake

Parallel Computing & Graphics: CUDA, OpenGL, ImGui