Jase Branch

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Education

University of Texas at Arlington, Arlington, TX
Bachelor of Science in Computer Science *May 2024*
GPA: 3.41
Relevant Coursework: Computer Architecture, Computer Vision, Compilers, Neural Networks

Oregon State University, Corvallis, OR
Master of Science in Computer Science *Expected Fall 2027*
Relevant Coursework: Computer Graphics, Algorithms

Personal Projects

Autonomous Drone Simulator (C++, OpenGL, Ada, Boost.Asio, Bullet)
- Simulated realistic drone dynamics and collisions using Bullet Physics integrated with OpenGL.
- Developed a virtual flight controller in Ada communicating via UDP for real-time control.
- Emulated onboard sensors (IMU and GPS) using Boost.Asio for asynchronous networking.
- Unified physics, sensor, and control systems into a cohesive real-time simulation pipeline.

Embedded Sensor Fusion Network (C++, Rust, FreeRTOS, Embassy)
- Built a multi-node embedded system linking STM32 and ESP32 devices over CAN and Wi-Fi.
- Fused accelerometer and gyroscope data (MPU-6050) using C++ (FreeRTOS)
- Refactored common CAN bus logic and serialization into reusable, testable libraries.

OpenGL 3D Renderer (C++, OpenGL, GLSL)
- Built a real-time 3D renderer using modern OpenGL and GLSL shaders.
- Implemented Blinn-Phong lighting and shadow mapping.
- Created a custom ECS architecture for scalable scene management.

GPU Boid Simulation (C++, CUDA, OpenGL)
- Implemented Boid flocking simulation using CUDA for parallel computation.
- Visualized in real time with OpenGL instanced rendering.
- Achieved 35–40× higher agent counts at equivalent FPS compared to CPU.

Experience

Bell AVR Drone Competition (C++, MQTT, Embedded Systems) *Aug – Dec 2023*
UTA & Bell Flight: *Team Member*
- Debugged MQTT issues between drone subsystems on autonomous drone platform
- Tested sensor integration and verified data flow between flight controller and peripherals

Technical Skills

Languages:	C++, Bash, Rust, C, Python, Ada, SQL, Java
Tools & Frameworks:	Qt, CMake, Docker, Git, Clang, Boost.Asio
DevOps & CI/CD:	Docker, Git, Bash, Github Actions(CI/CD)
Graphics/Compute:	OpenGL, GLSL, CUDA, Bullet Physics
Embedded Systems:	STM32, ESP32, FreeRTOS, UART, I2C, SPI, MQTT, CAN bus