BENJAMIN STORTROEN

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EDUCATION

University of Minnesota, College of Science and Engineering Sept 2024 – May 2028
Bachelor of Science, Computer Science — GPA: 3.996 Minneapolis, MN
Relevant Coursework: Intro to Operating Systems, Software Design and Development, Machine Architecture, Data Structures & Algorithms, Interactive Graphics in Animation and Games

SKILLS

Skills: Python, Java, C, C++, C#, TypeScript, GDScript
Technologies: PostgreSQL, MySQL, Docker, Git/GitHub, GitHub Actions, React, Next.js, Cloudflare, Nginx, IntelliJ, VSCode

WORK EXPERIENCE

Software Engineering Intern May 2026 – Present
University of Minnesota, Aerospace Eng & Mech Dept Minneapolis, MN

- Partnered with the department lab manager to design and build a full-stack wind tunnel RPM monitoring dashboard used weekly by 50+ aerospace students, supplementing manual data collection for student lab sections
- Engineered a Raspberry Pi–based **embedded systems** tachometer using an IR sensor, applying **signal processing** techniques to filter noise and convert raw voltage readings into RPM data
- Designed a **PostgreSQL** database and **TypeScript** backend, handling up to 345,600 sensor entries per day
- Built a **Next.js**/**React** frontend visualizing live and historical RPM sensor data from four unique metrics: Air Speed, Motor RPM, Air Temperature, and Air Pressure
- Wrote a web scraper to display pressure readings from the lab's local pressure website
- Self-hosted on **Linux** computer and deployed the stack (**systemd**, **Nginx**, **Cloudflare**, **Docker**) for continuous lab availability
- Built a **CI/CD** pipeline with **GitHub Actions** as part of the project's **DevOps** workflow that redeploys the web app and updates sensor software remotely via SSH on every push to main

ACADEMIC PROJECTS

Earthquake Visualization Spring 2026
CSCI 4611 — Interactive Graphics in Animation and Games

- Built an interactive web-based 3D globe visualizing over 100 years of real earthquake data by location and magnitude
- Mapped flat geographic coordinates to spherical polar coordinates to provide a variety of **data visualization** options
- Added axial tilt and interactive mouse-driven rotation to a NASA Blue Marble–textured 3D globe

mgit — Custom Version Control System Spring 2026
CSCI 4061 — Intro to Operating Systems

- Built a Git-like snapshot/restore system in C that avoids storing duplicate data by hashing each file's contents to decide where it's stored on disk
- Compressed stored files with zstd and used hard links to skip re-copying anything unchanged between snapshots, and checksummed everything with SHA-256 to catch corruption before a restore

Robot Simulation Spring 2026
CSCI 3081 — Software Design and Development

- Collaborated on a team of 3 using **Scrum**, holding daily standups to coordinate work across systems while building a **C++** multi-robot simulation
- Designed a **Strategy pattern** for robot movement, using a Motion component that delegates to 13+ interchangeable strategies, combined with a **Composite pattern** for compound behaviors

LEADERSHIP EXPERIENCE

President May 2026 – Present
Video Game Development Club, University of Minnesota Minneapolis, MN

- Grew meeting attendance from 15 to 50+ students by recruiting beyond computer science majors, drawing in students from art, music, and writing backgrounds
- Designed and singlehandedly presented 6 technical workshops on **Godot** engine programming, graphics shader development, level design, asset design, sound design, and **Git** fundamentals
- Directed an 8-person team to design, build, and ship a physics-based platformer in **Godot**, published on **itch.io**