Jonathan Bonham

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Education

University of Alberta Sep. 2023 – Present
BSc Computing Science - Specialization

Experience

Software Co-Lead Aug 2025 – Present
The Autonomous Robotic Vehicle Project *Edmonton, AB*
Skills: *Python, C++, ROS 2, Docker*

- Managing a large team of students working on various projects in topics like computer vision, visual servoing, PID control, and embedded software
- Overseeing all software for our robots and ensuring it is dependable and accurate
- Ensuring code works by testing in real-world environments
- Collaborating with different disciplines including Electrical and Mechanical Engineering sub-teams

Software Member Jan 2025 – Aug 2025
The Autonomous Robotic Vehicle Project *Edmonton, AB*
Skills: *Python, C++, ROS 2, Docker*

- Implemented quality-of-life fixes in the Gazebo robot simulator, significantly enhancing the testing experience
- Represented ARVP at RoboSub 2025, finishing in the top 10 out of 60 teams
- Contributed to data labelling, testing, debugging, and other essential competition duties in addition to working on code to complete missions

Teaching Assistant - CMPUT 201 Sep 2025 – Present
University of Alberta *Edmonton, AB*
Skills: *C, Linux, Git, Bash*

- Evaluated and debugged code in a class of over 500 students
- Diagnosed many technical issues during office hours, such as syntax and logic errors
- Mentored students on CS topics such as C syntax, dynamic memory allocation, and Linux fundamentals
- Led weekly lab sessions of over 100 students, presenting helpful information and marking demonstrations

Projects

Visual Servoing Control System Mar 2025 – Present
Skills: *Python, NumPy, Docker*

- Developed a visual servo based control system for autonomous robotics
- Referenced scientific papers about image-based visual servo
- Adjusted control system for versatility on multiple robots
- Achieved 99% accuracy during real-world trials

Ray-traced 3D Renderer Nov 2024 – Dec 2024
Skills: *C, Make*

- Designed and developed a 3D rendering application using C
- Implemented a unit-test process with 150+ cases and successfully passed all
- Developed a robust and refined build system using Make

Server Administration June 2018 – Present
Skills: *Linux, FreeBSD, Docker, Networking*

- Designed and configured multiple servers on public and private networks for hosting various services
- Using containerized applications to isolate dependencies, decrease deployment time and achieve a 99% uptime
- Used GitHub Actions to automatically containerize and deploy my own software
- Deployed standard firewall utilities and reverse proxies to ensure safety against malicious actors

Technical Skills

Languages: Python, C, C++, Java
Tools: Linux, Windows, Git, GitHub Actions, Docker, Microsoft 365 + G Suite
Libraries: ROS 2, NumPy, SQLite