



Jeffrey Boersma

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EDUCATION

B.E.Sc. Mechatronic Systems Engineering | Western University | London, ON

2018 - 2023

- Graduated from Bachelor of Engineering Science program with distinction
- Achieved Dean's Honor List in all four years of study
- Awarded the Western Scholarship of Excellence upon entry into the program

Relevant courses and competencies include:

- *Computer Science Fundamentals I & II*
- *Advanced Image Processing and Analysis*
- *Applied Probability and Statistics*
- *Advanced Digital Signal Processing*
- Experience with C, Java, Python, MATLAB, SQL
- Experience training neural networks in MATLAB

EMPLOYMENT

Contractor, Systems Engineering | General Dynamics Land Systems-Canada | London, ON **Mar 2024 - Present**

- Develop and manage requirements databases in IBM Rational DOORS for defense projects
- Ensure stakeholder needs are clearly and traceably translated into verifiable subsystem requirements
- Collaborate with a wide range of subject matter experts to compile suitable and consistent sets of requirements for developing effective solutions
- Took initiative in developing automation scripts using DOORS Extension Language (DXL) to improve the efficiency of requirements management processes
- Compile component specification requirements to be sent out to suppliers for sub-contracted components

QA Automation Intern | J.D. Power | London, ON

May 2021 - Aug 2022

- Automated the testing of crucial sales and marketing software used by a large global automaker
- Developed test automation code in Java using IntelliJ IDE, tracked changes using git software version control
- Designed software test plans to ensure full test coverage, preventing bugs from reaching the customer
- Solved an issue with automating test data setup that full-time employees had been unable to solve, enabling overnight test runs and freeing up numerous employee working hours on every test cycle
- Queried databases using SQL, retrieved data from remote servers using Linux commands, parsed custom XML, JSON, and text files in order to troubleshoot issues flagged by the test automation software
- Documented the automation code in user guides clearly and concisely to ensure effective knowledge transfer
- Communicated project progress and planned time allocation with the team at weekly status update meetings
- Conducted training for new and existing employees on how to write automation code to broaden their skillsets

PROJECTS

Lymph Node Extractor | Engineering Capstone Project | Tenomix Inc.

Sept 2022 - Apr 2023

- Designed an end effector for a cartesian manipulator capable of extracting, holding, and releasing core samples from fatty tissue, earning third place out of eighteen teams at the design showcase
- Created a proprietary design with industry sponsor to deliver a functional prototype in under eight months
- Worked with sponsor to identify the design problem, presented them with potential solutions, and kept them updated with project progress
- Wrote control code for stepper motors in Arduino/C, including a homing algorithm using limit switches. Iteratively tested and improved the code until the desired results were achieved
- Wired electrical components, including an Arduino microcontroller, A4988 motor drivers, and limit switches, according to their respective documentations
- Compiled a detailed design document showing the full design process, including schematics of the electrical systems, wiring instructions, troubleshooting procedures, and bill of materials
- Created test procedure and tested prototype on imitation fatty tissue and real fatty tissue. Evaluated test results and identified possible areas of improvement

Neural Networks for Image Classification | *Advanced Image Processing and Analysis* Course Assignment

- Designed, trained, and tested a custom multi-layer image classification neural network in MATLAB using the CIFAR10 dataset, achieving a testing accuracy of 75%
- Conducted a transfer learning experiment, leveraging the VGG-16 pre-trained network, to achieve a testing accuracy of 93% on the CIFAR10 dataset
- Analysed the training and testing results of the two networks, noting that the custom network had an issue with overfitting, due mostly to its smaller training sample size
- Compiled a final report documenting the process

TV Remote Passing Robot | *Robotic Manipulators* Course Project

- Designed a serial link robotic manipulator to complete the simple task of passing a TV remote and simulated its performance
- Wrote code in MATLAB to compute the forward, inverse, and differential kinematics of the manipulator
- Implemented a path-planning algorithm using potential fields to avoid obstacles in the robot's workspace
- Computed the dynamic equations of motion to get the forward and inverse dynamics of the manipulator
- Designed, modelled, and simulated an inverse dynamics control system in Simulink for the manipulator using the computed forward and inverse dynamics of the manipulator
- Compiled a final report to document the design process and the simulation test results

Self-Cleaning Park Bench | *Microprocessors and Microcomputers* Course Project

- Designed the control system for a self-cleaning park bench concept, intended to apply microcontrollers to solve a real-world problem
- Programmed code in C to take environmental data from sensors and use it to control the behaviour of the bench cleaning actuation system
- Simulated and verified code behaviour using an ARM Cortex A9 DE10 microcontroller simulator. Developed a system for using the simulator's built-in VGA display
- Investigated the microcontroller's memory space in the simulator to find and map the memory allocated to the VGA display because the documentation on the display was insufficient
- Created a MATLAB script to convert images to the proper size and colour code format to be displayed on the simulator's VGA display
- Compiled a final report to properly document the design process and the developed software