



ALEXANDER VAN KRALINGEN

MECHATRONICS ENGINEERING STUDENT

CONTACT

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<https://github.com/vankraa/Portfolio>

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EDUCATION

Mechatronics Engineering Co-op (B.Eng.)

2018 – 2022

Faculty of Engineering: McMaster University, Hamilton, Ontario

• C/C++, Python, MATLAB, Bash, Linux UI, SQL, Django, Java, Elm, AutoCAD, Multisim, LabView, Google Cloud Platform, Microsoft Office

Mechanical Techniques Certificate (Electrical Monitoring and Systems)

2013

Skilled Trades (Electrician): Mohawk College, Stony Creek, Ontario

• Hand/Power tools, Electrical Measurement Instruments, Safety procedures, soldering

RELEVANT COURSES

- **Programming for Mechatronics:** C/C++ data structures and memory management
- **Data Structures, Algorithms and Language Concepts:** advanced programming with an emphasis on embedded systems.
- **Computer Science Practice & Experience:** simple app development with server communication.
- **Dynamic Models and Control of Physical Systems:** control theory, stability analysis and feedback controller design.

EXPERIENCE

McMaster Certified Tutor

Tutor Ocean - Hamilton, ON

2018 – Present

Tutor for various undergraduate courses:

- Linear Algebra
- Computer Science Practice and Experience: Basic Concepts
- Waves, Electricity and Magnetic Fields
- Engineering Mathematics II, III, IV
- Engineering Computation

McMaster Autoplow – Electrical Control Systems Team

McMaster University - Hamilton, ON

2020

- Designing and implementing electronic control and communication systems within the automated snowplow robot
- Troubleshooting existing components through testing and tuning to optimize performance and minimize problems (overheating, sensing errors, etc.)
- Working with a team of electrical, software and mechanical specialists in order to effectively combine and control components

- **Analog and Digital Circuits:** circuit component analysis, Boolean logic and digital circuit design.
- **Electrical Circuits and Power:** transformers, motors, single and 3-phase power circuits and induction motors.
- **Sustainability and Ethics:** economic, environmental and social responsibility of engineers

VOLUNTEER

Ascension 2020

Students for the Exploration and Development of Space

- Registered attendees and assisted with questions, organization

Computer Science Practice and Experience: Basic Concepts (COMPSI 1XA3)

Title: App Development with Server Communication

Winter 2019

- Created gameplay moments, including: collision detection, zombie army lists, an upgrade system and various game states using Elm
- Initialization of a server using Django's python web framework
- Authenticated user with login information to save game progress to the server
- Game upgrade information and scores saved in SQL tables on the server to be called upon request and ranked against other players

Communication Skills (COMPSCI 3I03)

Title: App Design and Business Proposal with Technical Report

Fall 2019

- Designed a mobile application for McMaster's co-op and career portal OSCAR Plus
- Used www.figma.com to create a working visual demo of the application
- Worked with three team members to develop a business model and create a technical report of the back-end and framework of the application for future development

Personal Project

Title: Raspberry Pi Garage Door Opener

Spring 2019

- Used a Raspberry Pi and Relay to create a WiFi garage door opener
- Programmed the Raspberry Pi by following an online tutorial primarily using Bash to control the opener
- Server implementation for remote door opening

Kindergarten English Teacher

Jiangdong International Preschool - Ningbo, China

2016 – 2017

- Developed lessons for first time English language learners
- Helped children aged 2-6 develop an interest in both education and learning a new language through various methods i.e. audiovisual learning, activities, puzzles, and crafts
- Managed a classroom of 18-20 students while ensuring that each student maintains an understanding of the lesson material

Mold Cell Operator

Niagara Piston - Beamsville, ON

2015 – 2016

- Operated a series of machines in tandem including: hydraulic press, electromagnetic oven, hot mold press and cutting tool.
- Ensured proper temperatures/specifications for all machines in the cell and making adjustments when needed
- Performed quality control inspection of the products after each cycle
- Provided mechanical maintenance on machines as needed