



**Portfolio – [GitHub](#) – [LinkedIn](#)**  
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## Skills

Languages	Python, TypeScript, JavaScript, C, Java, HTML, CSS
Libraries	Angular, Node.js, Vue, React, Arduino, OpenCV, TensorFlow, ROS, NumPy
Engineering	SolidWorks, Altium, MATLAB, Jupyter
Certifications	Standard First Aid, AED, CPR Level C, WHMIS, G Suite

## Technical Experience

### Software Developer Co-op – [TickTrade Systems](#)

Jan - Apr 2021

- Built dropdown list component with autocomplete, screen reader support, and performant support for thousands of items using Angular Material
- Advocated for and created interactive documentation on internal web components for developer reference and to demo development progress during design meetings
- Migrated a currency trading page from Angular.js 1.x to Angular 11, checking in with design stakeholders weekly
- Created type definitions in TypeScript for all datatypes used in the application to improve code quality and prevent type errors

### Comms Sub-Team Member - [UBC Orbit](#)

Sep 2019 – Aug 2021

- Used software-defined radio to test prototype radio hardware, successfully verified that it was transmitting at the correct frequency using spectrum analyzer
- Worked on a Python-based serial test client to automate 24/7 reliability testing of satellite-mounted radio hardware
- Tested client using an Arduino sending mock data back to the test client over serial

### QA Testing Co-op – [Edsby](#)

Feb – Jun 2018

- Tested preview versions of learning management system following a precise test plan, used a ticketing system to report bugs before they were sent to customers
- Wrote a Python script to combine datasets from two CSV files, migrating data to a new format
- Participated in and edited an interview video describing the benefits of the product for parents
- Created demo posts and assignments to show potential customers what a classroom could look like if they were using the product

### Full-Stack WordPress Developer - [Zoom Digital](#)

Jul – Aug 2017

- Built an E-commerce website for a client using HTML/CSS starting from a Bootstrap template
- Used Gulp to automate responsive image resizing and insert the responsive image set onto the site
- Wrote blog posts and product information pages for another client, improved SEO
- Used PHP to modify a WordPress template to the client's specifications



# Nicholas Carr

## Projects

### Autonomous Parking Enforcement Competition

Sep – Dec 2021

- Wrote an autonomous robot controller in Python using ROS framework to drive around a track and read license plates from parked cars in Gazebo simulation
- Processed camera images using OpenCV
- Created a license plate character recognition model using Keras and TensorFlow
- Wrote PID line-following algorithm using image of road markings

### Autonomous Can Collecting Robot - (AR Demo)

May – Aug 2021

- Designed an autonomous robot to collect and drop off soda cans as part of a team of 4 in a design course
- Created electrical schematics and designed perfboard circuit using EasyEDA
- Contributed to mechanical design using OnShape CAD software
- Contributed to PID line-following algorithm and robot controller code, written in C
- Fabricated one copy of robot design by hand at home using corrugated plastic and hand-soldered components to a set of perfboards
- Tested hardware with oscilloscope and function generator
- Created an animation of robot arm in Blender, and a [website](#) to demonstrate it in AR
- Robot collected and stored 5 out of 6 cans on competition day

### Video Doorbell Project - (GitHub)

Aug 2020

- Wrote Arduino firmware to stream video from an off the shelf ESP32 camera module
- Implemented MJPEG video streaming and MQTT telemetry and control
- Integrated camera into Home Assistant home automation platform

## Hackathon Experience

### Faucet Drip Detector – [MasseyHacks V](#)

Mar 2019

- Built an internet-connected device to detect faucet leaks
- Wrote Arduino firmware to read a water sensor and log drip events to a Node.js server
- Created a custom water sensor using water droplets as a conductive path
- Won third place and the Great Lakes category prize

### Thing – THacks 2

Oct 2017

- Used Node.js and Twilio to create a service that would return weather, directions, and other info if requested via text message, so people without mobile data could still get information
- Integrated features in a fast-paced environment; built service within 36 hours
- Won first place, best pitch, and RBC's #FutureMaker's award for the most innovative solution

### Co-founder - [Cursor](#)

Sep 2017 - Jun 2019

- Helped Toronto-area youth learn to code through introductory workshops
- Managed 9 volunteers and hosted 2 technology-related events
- Co-lead a 3-hour React Native workshop for 20 attendees aged 12-16
- Organized a 12-hour hackathon for 18 participants

Jul 2018

Feb 2019

## Education

Third-year Engineering Physics student at the University of British Columbia

2019-2024