





# Anqi Xu

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## SKILLS

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<b>Programming Languages</b>	Java, C++ /C, Python, HTML/CSS, Latex
<b>Electrical</b>	KiCAD, Microcontrollers, Soldering, Oscilloscopes
<b>Mechanical</b>	Onshape, Solidworks, Machining & Fabrication
<b>Languages</b>	English (native), Mandarin (fluent)

## TECHNICAL EXPERIENCE

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**BC Cancer Research Co-op** Jan 2022 - Apr 2022

- Assisted in the development and training of a deep-learning algorithm to segment cell nuclei with up to a 98% accuracy rate
- Analyzed and delineated over 800 whole-slide histopathology images within MATLAB to further the development of a diagnostic software suite of tools
- Designed and soldered PCBs in KiCAD for multispectral imaging, emphasizing spacial efficiency

**UBC Rocket — Aerostats & Airframe and Internals** Sept 2020 - May 2022

- Created and launched a meteorological balloon to test wind conditions up to 30km high to determine the suitability for rocket launches
- Designed and soldered circuits for electrical components, focusing on lightness and efficiency due to the limited payload capacity of the balloon
- Measured force and pressure within an RCS (Roll Control System) test stand using Labjack and Labview
- Calibrated a strain gauge S-type load cell for up to 30 kg

## SOFTWARE PROJECTS

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**Machine Learning Parking Agent - Python | ROS** 2022

- Developed a ROS algorithm for autonomous navigation of a robot to collect license plate information
- Trained CNNs and utilized openCV algorithms for license plate identification, character segmentation, and numerical classification

**Image Editor - C++** 2022

- Created a linked-list ADT for image manipulation, allowing for efficient rotation, rearrangement, & reversibility of input image
- Managed dynamic memory whilst efficiently partitioning images

**Treasure Map Cryptography - C++** 2022

- Used pixel modification and embedding algorithms to create a virtually indistinguishable map that can be decoded to find the treasure located at longest distance to the start

**Wikipedia Web-scraper - Java** 2021

- Implemented depth-first search and reverse hashmap sorting to determine the shortest path between two Wikipedia pages
- Created a mediator server to retrieve pages and statistical information regarding requests
- Utilized caching and staleness intervals to minimize network access

### Email Analyzer - Java

2021

- Used graph theory to collect and advanced metrics based on a chain of emails, with filters to specify interactions
- Generated reports on certain users and time frames, as well as compared users based on different types of activity
- Used JUnit and test-driven development for 97% line coverage

### Plagiarism Detector - Java

2021

- Created a document analyzer using Java that parsed through websites or text files to determine sentence and word level metrics, and similarity
- Developed algorithms to perform linguistic analysis using the Google Sentiment Analysis API
- Compared documents and partitioned them accordingly using similarity metrics

### Portfolio Website - HTML/CSS | Flask | Javascript

2021

- Created and designed a website to display experiences, projects, and skills creatively and interactively with HTML, CSS, Python and Flask

## ELECTRICAL PROJECTS

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### Autonomous Treasure Hunting Robot - C++ | Mechanical Design | Electrical Design

2022

- Manufactured a fully autonomous robot that follows tape, avoids bombs, and uses IR to detect, collect and store treasures within a team of four
- Integrated a control algorithm in C++ to communicate with a variety of sensors and motors
- Used Onshape and manufacturing equipment (3D printer, laser cutter, hand-tools) to construct an arm capable of detecting, identifying, and retrieving randomly located idols
- Soldered PCBs for H-Bridges, magnetic detection circuits, reflectance circuits, and limit switches

### Analog-Digital Converter - Electrical Design

2021

- Created a circuit to convert an analog voltage into a digital representation via pulse generation that is then outputted into a number displayed by small LEDs

### Circuit Design and Analysis Lab - Electrical Design

2021

- Experimentally designed and troubleshoot steady-state RC circuits, damped harmonic oscillators, voltage amplifiers, NAND gates, and logic gates made from MOSFET and BJT transistors
- Determined values for capacitors, frequency responses, time constants, resonant frequency and damping, diodes, switching latency, amplitude responses, and critical operating parameters
- Mathematically modeled results through curve-fitting and waveform function via MATLAB

## EDUCATION

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### The University of British Columbia

Engineering Physics, Bachelor of Applied Science

Sept 2020 - May 2025

GPA: 4.0/4.33

## HOBBIES

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Environmentalism

Journaling

Reading

Cooking

Exploring!