

# VAIBHAV AMBASTHA

6134 Cambie St, Vancouver, BC

☎ 778-751-2760

✉ [vaibhav.ambastha@gmail.com](mailto:vaibhav.ambastha@gmail.com)

🌐 [linkedin.com/in/vambastha](https://www.linkedin.com/in/vambastha)

🔗 [github.io/personal-website](https://github.io/personal-website)

## Technical Skills

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**Languages:** Java | C++ | C | HTML/CSS | ARM Assembly | Python | Verilog

**Developer Tools:** VS Code | IntelliJ IDEA | ModelSim | Jupyter Notebook | Quartus

**Technologies/Frameworks:** Linux | GitHub | JUnit | Confluence | Docker | FPGA

## Education

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### University of British Columbia

**Expected Graduation: May 2027**

*Bachelor of Applied Science in Computer Engineering – Second Year Student*

*Vancouver, BC*

**Relevant Coursework:** Data Structures & Algorithms | Object-Oriented Programming | Software Construction | Computer Architecture | Circuit Analysis

## Experience

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### UBC SailBot

**Jan 2024 – Present**

*Network Systems Developer*

*Vancouver, BC*

- Designing onboard network infrastructure for an autonomous boat, gaining extensive experience in C++, working with Iridium satellite communication, and ensuring reliable data exchange.
- Implemented system to fetch global path waypoints from remote server to the Iridium satellite network, parsing HTTP request for waypoints and converting to Google Protobuf for serialization.
- Conducted comprehensive testing procedures by POSTing and querying the SailBot database.
- Using Confluence and GitHub to assign and resolve issues, developing documentation and collaboration skills.

### UBC Geering Up Engineering Outreach

**June 2023 – September 2023**

*Offsite Camps Instructor*

*Surrey, BC*

- Instructed diverse age groups and skill levels in various programming languages and tools vital to software engineering, such as Python, Arduino, and HTML.
- Led hands-on coding projects aimed at developing practical skills in software development, resulting in the creation of web applications, games, and software prototypes.
- Collaborated closely with camp organizers to refine the coding curriculum, integrating industry best practices.

## Technical Projects

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### Premier League Prediction Model | *Python, Pandas, Scikit-Learn*

**January 2024**

- Web scraped football data utilizing requests, BeautifulSoup, and Pandas libraries to analyze multiple DataFrames.
- Applied Random Forest algorithm from machine learning library scikit-learn to forecast match outcomes based on ranging conditions resulting in a 55.4% accuracy score based on training data.
- Tested machine learning method against rolling average statistical method to validate robustness of model.

### IoT Data Analytics and Concurrent Client Handling Server | *Java, JUnit, Socket Programming*

**December 2023**

- Developed Java program to simulate an IoT analytics sever which received sensor data and provided 16 various services to clients such as notifications, aggregation, and predictive modelling.
- Handled concurrent clients through efficient implementation of server socket programming while ensuring QoS.
- Launched AWS Lambda to strengthen server networks, optimize event handling, and develop predictive services.

### RISC Machine | *Verilog, ARM Assembly, ModelSim, Quartus*

**November 2023**

- Assembled a RISC Machine utilizing Verilog HDL to maximize performance on the five-stage pipelined processor.
- Implemented a range of instructions to optimize instruction executions through the processor and tested architecture by generating exhaustive Verilog testbenches in ModelSim.
- Improved CPU to process ARMv7 instructions such as LDR, ADD, CMP within 15 cycles and presented on FPGA

### Soundwave Analysis Program | *Java, JUnit*

**October 2023**

- Implemented Java program to analyse soundwaves supporting wave operations such as superimposition, similarity, etc.
- Deployed a Discrete Fourier Transform (DFT) algorithm using complex numbers to apply ranging filters.
- Utilized JUnit to develop comprehensive test suites to achieve 95% branch coverage and 95%+ line coverage.

## Interests & Languages

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**Interests:** Football (Barcelona Fan) | Journaling | Swimming | Sunset Watching | Formula One

**Languages:** Native English Speaker | Native Hindi Speaker | Proficient French Speaker