Vaibhav Ambastha

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Technical Skills

Languages: Java | C++ | C | SQL | Scala | ARM Assembly | Verilog | Python
Developer Tools: VS Code | IntelliJ IDEA | ModelSim | Jenkins | Quartus | DBeaver | Apache Zeppelin
Technologies/Frameworks: Linux | GitHub | JUnit | FPGA | MongoDB | Docker | Apache Hive | Apache Hadoop

Education

University of British Columbia **Expected Graduation: May 2027**
Bachelor of Applied Science in Computer Engineering – Third Year Student *Vancouver, BC*
CGPA: 3.70/4.33, Dean's Honour List 2023
Relevant Coursework: Data Structures & Algorithms | Object-Oriented Programming | Software Construction | Computer Architecture | Operating Systems | Digital Systems Design

Experience

UBC SailBot **January 2024 – Present**
Software Developer - Network Systems *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 MongoDB SailBot database
- Employing Confluence and GitHub to assign and resolve issues, developing documentation and collaboration skills

Insurance Corporation of British Columbia **May 2024 – August 2024**
Data Engineer Co-op *Vancouver, BC*
- Designed and deployed ETL pipelines using Scala and Apache Spark to process large datasets for business intelligence, collaborating with cross-functional teams under the Agile Scrum framework to maintain high data quality standards
- Leveraged SQL to execute complex data queries and transformations within Apache Hive supporting the decommissioning of Enterprise Data Warehouse (EDW) to Big Data Management (BDM)
- Optimized data storage solutions with Apache Hadoop and implemented best practices of data partitioning and caching to enhance database performance and ETL pipeline efficiency
- Integrated Jenkins for continuous integration and automation of ETL pipeline testing and deployment, reducing manual intervention and increasing development velocity

Technical Projects

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

Interests: Football (Barcelona Fan) | Journaling | Swimming | Sunset Watching | Formula One
Languages: Native English Speaker | Native Hindi Speaker | Proficient French Speaker