

SUJAL BOLIA

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EDUCATION

University of British Columbia

Bachelor of Science in Computer Science

Courses: Advanced Algorithms (DSA), Cloud Computing, Randomized Algorithms, Hardware & OS, Theory of Computing

Vancouver, BC

Sep 2020 – May 2024

EXPERIENCE

IIT Bombay

July 2024 – Dec 2024

Machine Learning Engineer (Contract)

Mumbai, MH

- Implemented a ResNet and BoTNet hybrid re-id model, achieving a state-of-the-art **mAP score of 85.6** with **97% fewer parameters**
- Innovated a universal ML deployment and testing framework, **reducing model evaluation time by 30%** and allowing researchers to assess models without code alterations
- Built a streamlined Docker image to containerize the ML framework, **reducing setup time by 40%**
- Fine-tuned a suite of computer vision XAI techniques to uncover hidden biases and enhance model transparency
- Leveraged LLM models to supplement explainable AI results, boosting model understandability

Microsoft

May 2022 – Aug 2022

Software Developer Intern - Mentorship Program

Remote

- Engineered a Discord bot in Rust to automate the gameplay of text-based Werewolf games, supporting **over 20 players in a game**
- Developed a custom markdown-to-HTML converter for dynamic PDF generation, using the *wkhtmltopdf* command-line tool
- Designed a BCNF-normalized database schema to manage game data efficiently, optimizing queries for rapid game state updates

Microsoft

May 2021 – Aug 2021

Software Developer Intern - Mentorship Program

Remote

- Developed a command-line tool to extract data from various compression formats (LZMA, LZHAM, ZSTD), processing raw data to create and combine shapes to form images
- Created low-level Rust bindings for the LZHAM decompression format to enhance compatibility
- Optimized code through parallelization and memory management, achieving a **10x speedup**, reducing runtime from **over 4 minutes to under 20 seconds** for large files
- Implemented a robust continuous integration and deployment (CI/CD) pipeline using GitHub Actions, ensuring seamless testing and deployment across major operating systems

PROJECTS

Brawlcord | Python, Rust, Asyncio, SQLite, Redis, AWS

[GitHub](#)

- Developed an interactive, text-based multiplayer game inspired by Supercell's Brawl Stars using Python
- Designed a modular, asynchronous framework in Rust for core gameplay mechanics, enabling others to build customized versions
- Implemented features like PvP battles and an in-game currency system to enhance player engagement
- Optimized performance for responsive experiences, supporting **1,000+ players across 400+ servers**
- Utilized SQLite and Redis for data storage and caching, and deployed on AWS for scalability

serenity-utils | Rust, Tokio, futures

[crates.io](#)

- Developed an async Rust crate to enhance the *serenity-rs* Discord API wrapper, with **over 10,000 downloads**
- Implemented customizable pagination menus, asynchronous input watchers with timeout for enhanced user interactivity, and custom model parsing for optimized data processing
- Provided over 10 fully generic helper models and functions to streamline development and improve code reusability

peerAdvice | TypeScript, React, Flask, Jinja, Firebase, Calendly

[GitHub](#)

- Created a peer-to-peer advising platform connecting lower-year students with upper-year mentors, enhancing academic support
- Implemented secure Firebase authentication for seamless user login, ensuring data privacy and integrity
- Integrated real-time scheduling with Calendly, allowing users to view availability and send appointment requests efficiently
- Collaborated with my team to successfully deliver the project within a 24-hour deadline, demonstrating strong teamworking skills

TECHNICAL SKILLS

Languages: Rust, Python, C/C++, Go, TypeScript, JavaScript, Java, HTML, CSS, SQL

Frameworks & Libraries: React, Node.js, Flask, Django, JUnit, FastAPI, Express.js, NumPy, pandas, asyncio, tokio

ML: TensorFlow, PyTorch, Keras, scikit-learn, LLMs, GPT-4, Transformers, Computer Vision, Deep Learning

Misc: Git, Docker, GitHub Actions, AWS, Azure, Kafka, Spark, PostgreSQL, Elasticsearch, Redis