Kunal Bajaj

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bajajku-portfolio/

Education

Sheridan College **September 2022 – December 2026**
Honours Bachelor of Computer Science (Mobile Computing) *Oakville, ON*

- **GPA: 3.71**
- **Courses:** Software Engineering, Software Design, Web Application Design and Implementation, Operating Systems, Computer Architecture, Data Structures and Algorithms, Advanced Mobile Application Development

Experience

Software Developer **January 2024 – Present**
Korah Limited *Remote*

- Continuing development of **FindMyBed Project**, focusing on feature enhancement, performance optimization, and user experience improvements.

AI and Process Optimization Analyst **September 2024 – December 2024**
Korah Limited *Oakville, ON*

- Developed and implemented **State Machine-based AI algorithms** in **Python**, processing **700+** yearly NICU bed predictions with **90%** accuracy, reducing decision time by **35%**.
- Built responsive frontend simulation using **Python's Pygame** library to visualize patient transfers, improving operational tracking by **40%**.
- Facilitated **15+** requirement gathering sessions with **healthcare professionals**, achieving **95%** stakeholder satisfaction and implementing **25+** critical system improvements based on **operational feedback**.

Artificial Intelligence Research Assistant **October 2023 – September 2024**
Sheridan Centre for Applied AI (CAAI) *Oakville, ON*

- Implemented advanced **NLP algorithms** using **Transformers** and **LangChain**, developing a chatbot that processed **1000+** monthly queries with **90%** accuracy and reduced response time by **45%**.
- Engineered a **Retrieval-Augmented Generation (RAG)** system using **FastAPI backend**, handling **150+** concurrent requests and improving query resolution speed by **80%** while maintaining **99.9%** uptime.
- Engineered dynamic and context-aware **prompts**, leveraging **few-shot learning**, and **chain-of-thought prompting** to improve response relevance and coherence by **20%**, eliminating the need for **model retraining**.

Software Developer **May 2024 – August 2024**
Sheridan Centre for Applied AI (CAAI) *Oakville, ON*

- Engineered a **communication layer** for wearable sensors using **Arduino IDE** and **C++** for **ESP32** hardware and **Node.js** for backend integration, improving **data transfer speed** by **20%**.
- Designed and optimized a **MongoDB** database hosted on **AWS Cloud** for real-time analytics, increasing query efficiency by **25%**.
- Developed a responsive **ReactJS frontend** dashboard, processing real-time data from **50+ sensors** simultaneously with **99%** uptime and reducing system monitoring time by **30%**.

Projects

Vercel Clone - Fullstack Application | *GitHub* **ReactJS | Node.js | Express.js | AWS**

- Developed a scalable **Vercel-like deployment** platform using **React**, **Node.js**, and **ExpressJS**, reducing app deployment time by **40%** through automated pipelines.
- Implemented scalable file management system using **AWS S3** and **Redis** queues, handling deployment packages with **95%** reliability and achieving consistent response times for file operations.
- Engineered comprehensive **REST APIs**, achieving **95% test coverage** through Jest and maintaining **cross-browser compatibility** across Chrome, Firefox, and Safari with **98%** performance consistency.

Online music streaming platform | *GitHub* **C# | ASP.NET | EntityFramework | REST API**

- Built an online music streaming app using **C# ASP.NET Framework**, integrating **Spotify's API** to manage search and recommendation features.

- Implemented secure user authentication system using **ASP.NET Identity Framework** and optimized data persistence with **SQL Server** for song metadata storage, reducing API calls by **30%**.

Groovify - iOS App | *GitHub* **Swift | SwiftUI | Firebase | LLM**

- Built an **iOS music recommendation** app using **Swift** and **SwiftUI**, integrating **Spotify's API** to analyze user listening patterns and generate mood-based recommendations with **85%** accuracy.
- Implemented **Firebase authentication** for secure user login and efficient local storage using **CoreData** for song metadata, reducing API calls by **30%**.
- Developed an **AI-powered recommendation engine** using open-source **emotion detection** model from **HuggingFace**, maintaining **95%** recommendation accuracy.

Efootball Regression Project | *GitHub* **Python | Tensorflow | Sci-Kit Learn | Pandas**

- Engineered **Python web scraping scripts** using **BeautifulSoup** and **Selenium** to extract **1000+** player statistics across **15+** performance metrics, achieving **98%** data collection accuracy.
- Implemented **data preprocessing** pipeline using **pandas** and **scikit-learn**, cleaning **20+ features** and reducing missing values from **15% to** $<$ **1%**, resulting in a high-quality dataset for **model training**.
- Developed a **linear regression** model using **TensorFlow** to predict player ratings for different positions, with **90% accuracy**, reducing prediction error by **25%** through **feature selection and model optimization**.

Technical Skills

Languages: C#, JavaScript (ES6), Python, SQL, C/C++, Swift
Frameworks and Libraries: ASP.NET, ReactJS (Redux, Jest), Node.js, ExpressJS, FastAPI, Docker, SwiftUI
Developer Tools: Git (Command Line, GitHub/GitLab workflow), Postman, AWS (EC2, S3), Firebase, CI/CD
Database and Caching: MongoDB, SQL Server, PostgreSQL, Milvus, Redis