Jubal Bewick
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Large Language Models | RAG Systems | AI Application Development | Real-time ML Optimization | Semantic Search

Graduate Computer Science student specializing in AI/ML applications, Large Language Model development and Full Stack engineering. Proven experience building production-ready RAG systems, semantic search applications, and scalable AI platforms. Strong background in deep learning, NLP techniques, and real-time model optimization. Experienced in deploying LLM-based applications with concurrent request handling and performance monitoring.

Education & Certifications

Master of Science in Computer Science, Northeastern University, MA | 3.94 GPA — Expected in 05/2026
Master of Science in Acupuncture & Oriental Medicine, Bastyr University — 2014
Bachelor of Science in Natural Health Sciences, Bastyr University, WA — 2014

CERTIFICATES:

Machine Learning, UT Austin TACC Center (2024)

AI & NLP Projects:

- Engineered a comprehensive Retrieval-Augmented Generation system with LangChain, HuggingFace, ClickHouse vector DB, and gRPC-wired microservice architecture.
- Implemented a WebSocket API for live streaming data ingestion, triggering document chunking, embedding via SentenceTransformers, and semantic similarity search for real-time knowledge updates.
- Built asynchronous processing across microservices with robust concurrent request handling.
- Deployed an interactive dashboard to benchmark how streaming data impacts RAG pipeline performance.

Software Development Projects:

Real-Time Financial Data Processing App

- Developed a Java MVC application integrating Alpha Vantage API for live financial data analysis.
- Implemented GUI visualizations with multiple data persistence strategies, optimized for concurrent data streams.
- Applied TDD with comprehensive JUnit coverage, including automated GUI tests, ensuring high reliability and maintainability.

Machine Learning & Deep Learning Projects:

- **Advanced Unsupervised Learning for Data Reduction:** Engineered unsupervised learning algorithms for computational resource optimization in medical imaging and pattern recognition. Implemented PCA, MDS, and t-SNE for dimensionality reduction with K-Means and DBSCAN clustering, achieving significant data compression while preserving critical feature information.
- **Convolutional Neural Networks for Computer Vision:** Developed CNN architectures using TensorFlow for environmental classification tasks, integrating data preprocessing pipelines. Applied PCA for image compression and K-Means for color quantization, optimizing model performance while minimizing computational requirements for real-time applications.

Technical Skills

AI & ML: OpenAI API, Claude API, LangChain, HuggingFace (Transformers, LLM), Vector Databases, TensorFlow, PyTorch
Programming Languages: Python, Java, C++, TypeScript
Cloud & DevOps: AWS, GCP, Azure, CI/CD, Performance monitoring
Development Practices: OOP, MVC, Agile/Scrum, TDD
Systems & Architecture: gRPC microservices, WebSocket API, FastAPI, Docker, Asynchronous programming, Scalable deployments, API design, Microservice orchestration