Vini Rezanejad

Vini-41 | vr41 | vini-41.github.io | ok77@vt.edu | 571-466-9171

Education

Virginia Tech **Aug. 2025 – Present**

Bachelor of Science in Computer Science *Blacksburg, Virginia*

- **Relevant Courses:** Data Structures and Algorithms, Artificial Intelligence, Applied Machine Learning, Multivariable Calculus, Computational Linear Algebra, Statistics, Mobile and Web Application Development, Macroeconomics, Microeconomics

Technical Skills

Languages: Python, Java, TypeScript, JavaScript, HTML/CSS, SQL, R, MATLAB, LaTeX
Developer Tools: Git, Jupyter Notebook, IntelliJ, PyCharm, Eclipse, VS Code, Google Cloud, Azure, Android Studio
Libraries/Frameworks: TensorFlow, PyTorch, NumPy, Pandas, YOLOv8, OpenCV, React, Vite, Node.js, Next.js, Flask

Experience

Ibility LLC **Aug. 2023 – Sep. 2024**

Artificial Intelligence Intern *Washington, DC (Remote)*

- Built Retrieval-Augmented Generation chatbot prototype for Veterans Affairs claims assistance to help veterans navigate complex financial aid processes
- Deployed web scraping pipeline to extract 30,000+ legal documents from the VA's M28C manual and VR&E program documentation, overcoming JavaScript rendering, anti-bot protections, and inconsistent HTML structures across multiple chapters
- Designed custom text embedding and chunking system with token optimization strategies to manage context windows, ensuring accurate retrieval of legal information while eliminating model hallucinations on sensitive veteran benefit queries

Archimedes Infinitum Design Team **Sep. 2025 – Present**

Back End Developer (Microsoft Imagine Cup Competition) *Blacksburg, Virginia*

- Developing patent-pending physical therapy app that leverages NLP and real-time computer vision to generate personalized treatment plans and provide exercise form correction based on patient goals and mobility assessments
- Architecting two care pathways enabling patients to receive support through clinician-prescribed plans or independently via AI-guided therapy, extending physical therapy to users without healthcare provider access
- Implementing cloud-based data management to synchronize patient exercise data, performance metrics, and completion reports across wide range of platforms, facilitating healthcare provider oversight

Research

A Novel RAG-Based Chatbot Solution to Improve Textbook Material Understanding **Jun. 2025**

- Combined semantic search with active recall methodologies to enhance textbook comprehension and study effectiveness, addressing limitations of mainstream LLMs in extracting relevant information from lengthy academic materials
- Obtained 0.906/1.0 average performance score across 6 AP-level subjects, demonstrating strong reasoning capabilities and memory retention while providing credible academic assistance adaptable to diverse formats including PDFs, images, and MP3 audiobooks
- Reduced GPT-3.5 citation fabrication from 55% to 24% with 384-dimensional SBERT embeddings for semantic retrieval

MAXGBoost: A Fast Heuristic Approach to Adaptive Learning Rates in GBDTs **Jan. 2025**

- Optimized a gradient boosting algorithm for credit card fraud detection, creating a new approach with dynamic learning rate adjustment using momentum approximation adapted from neural networks to tree-based models
- Achieved 0.99980 accuracy and 0.93827 precision on 284,807-transaction dataset with 0.00172 fraud rate, outperforming previous models

Leadership

Key Club **Aug. 2022 – Jun. 2025**

President *TJHSST Chapter*

- Organized 4 major donation drives that collected 2,000+ items (books, toys, supplies, clothing) for underprivileged families through partnerships with Goodwill, Salvation Army, and Title I schools
- Coordinated 9 community service projects including neighborhood cleanups, food bank assistance, and senior center visits