

# VINI REZANEJAD

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

## Education

### Virginia Tech

*Bachelor of Science in Computer Science*

**Aug. 2025 – Present**

*Blacksburg, Virginia*

### Thomas Jefferson High School for Science and Technology

*Advanced Studies Diploma*

**Aug. 2021 – May 2025**

*Alexandria, Virginia*

**Relevant Courses:** Data Structures and Algorithms, Artificial Intelligence, Applied Machine Learning, Discrete Math, Statistics, Mobile and Web Application Development, Macroeconomics, Microeconomics, Chemistry

## 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

*Artificial Intelligence Intern*

**Aug. 2023 – Sep. 2024**

*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

*Back End Developer (Microsoft Imagine Cup Competition)*

**Sep. 2025 – Present**

*Blacksburg, Virginia*

- Developing a 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**

*tjSTAR Symposium*

- 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**

*TEKNOS Science Journal (34th Edition)*

- 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

*President*

**Aug. 2022 – Jun. 2025**

*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