# Mikail Stewart

8347 Frist Campus Center, Princeton, NJ 08544
609-436-8157 ms3554@princeton.edu MingkaiBuilds

## Education

**Princeton University** **September 2023 – May 2027**
*Bachelor of Science and Engineering in Computer Science* *Princeton, NJ*

## Relevant Coursework

- Data Structures and Algorithms
- Introduction to Machine Learning
- Computer Architecture and Organization
- Discrete Mathematics

## Experience

**Paragon Patents** **January 2024 – Present**
*Software Engineer / Machine Learning Engineer* *Princeton, NJ*

- Developed an end-to-end pipeline leveraging semantic similarity to trace and identify the research paper origins of legal claims within patents.
- Optimized the backend architecture using Flask by designing and implementing a modularization framework to improve maintainability and scalability of the platform.
- Developed a Python-based semantic search application to extract and match relevant information from PDF documents. Utilized Google Cloud Vision API for OCR, Sentence Transformers for semantic embeddings, and a cross-encoder for re-ranking, significantly improving information retrieval accuracy.

## Projects

**LEX: A Digital Consciousness** | *Python, Typescript, Javascript, React* **July 2025**

- Architected and developed LEX, a comprehensive AI assistant platform that integrates 7+ data sources (Obsidian, GitHub, Gmail, Google Drive, iMessage, Slack, Zotero) with advanced vector database technology and LLM integration, enabling users to query their entire digital footprint through natural language
- Implemented advanced AI capabilities including task intelligence engine, decision analysis, and conversation memory - built systems that extract tasks from emails/communications, classify priorities using Eisenhower Matrix, detect deadlines, map task relationships, and maintain contextual conversation state for personalized AI interactions
- Designed and built full-stack web application with Next.js frontend and Python backend featuring real-time chat interface, voice integration with Sesame AI, proactive task suggestions, and comprehensive dashboard with task analytics - deployed on Vercel with robust authentication, database management, and end-to-end testing infrastructure

**Password Entropy Analyzer** | *Python, Typescript, React* **July 2025**

- Built a real-time password entropy analyzer using information theory and Markov chain analysis, implementing Shannon entropy, min entropy, and conditional entropy calculations in TypeScript
- Implemented advanced pattern detection algorithms using Markov chains to analyze character transition probabilities and identify predictable password patterns
- Developed comprehensive testing suite using Vitest and React Testing Library, achieving 100% test coverage for core mathematical functions and edge cases

## Technical Skills

**Languages**: Python, Java, Typescript, Rust, Go
**Developer Tools**: VS Code, Git, Linear, ChromaDB
**Technologies/Frameworks**: ReactJS, NextJS, Flask

## Leadership

**Princeton Ring & Frame Agency** **May 2024 – Present**
*Director* *Princeton University*

- Oversaw the processing of ring and frame orders for the graduating class of Princeton undergraduate and graduate students, from initial request to final delivery, ensuring accuracy and adherence to client specifications.
- Managed various general affairs, including scheduling, documentation, and office organization, contributing to streamlined operations and enhanced team productivity.