Karandeep Singh

516-946-3922 | Email | Portfolio | LinkedIn | GitHub

Education

Northeastern University Boston, MA
Bachelor of Science in Computer Science, Minor in Philosophy *Sep. 2025 – May 2029*

Experience

Software Engineering Intern (Remote) Jan 2025 – Present
ThinkGrid Labs *Kerala, India*

- Developed and maintained frontend UI/UX features across multiple pages for Hyrelyst.com, handling user authentication and dashboard functionality
- Transitioned to full-stack development, building backend APIs and database integration using NodeJS and MongoDB, and managing a database of 300+ user records
- Collaborated with senior engineers using Git version control and agile development practices

Research

AI and Data Ethics Group (AIDE) Jan 2026 – Present
Northeastern University

- Contributing member of student research group focused on AI ethics, policy analysis, and responsible AI development
- Drafted and contributed language to proposed Massachusetts digital replica legislation; provided analytical suggestions, receiving positive feedback from group leads
- Engaged in ongoing analysis of AI policy proposals and ethical frameworks affecting emerging AI technologies

Projects

Radeye | *Computer Vision, ML, PyTorch* Apr 2026

- Built a real-time eye-tracking pipeline using MediaPipe Face Mesh and OpenCV to capture iris position and velocity from webcam at 30fps
- Collected 18 typing test sessions and extracted velocity features (avg, max, std deviation) for correlation analysis between eye movement and typing performance
- Found moderate positive correlation (r=0.469) between average eye velocity and WPM, with weak negative correlation (r=-0.321) for max velocity
- Trained a PyTorch feedforward neural network to predict WPM from eye movement features, achieving test RMSE of 36 WPM

Language Feedback API | *FastAPI, Anthropic Claude API, Python* Mar 2026

- Migrated boilerplate from OpenAI to Anthropic Claude Sonnet, designing a single-call prompt strategy with temperature tuning to deliver consistent JSON-formatted feedback within a 30-second response window
- Engineered prompts iteratively against multilingual test cases (Japanese, Portuguese), refining rules to handle phrasal grammar, conversational word choice, and direct-translation pitfalls
- Implemented JSON response validation as a safety net against malformed LLM output, plus unit, schema, and integration test suites with pytest
- Containerized with Docker and Docker Compose for reproducible deployment

Technical Skills

Languages: Python, Java, JavaScript, TypeScript
Web Development: Tailwind CSS, MongoDB, NodeJS, NextJS, React, Framer Motion, Shadcn
ML/Data Science: Pandas, Matplotlib, NumPy, Scikit-learn, PyTorch, MediaPipe, OpenCV, FastAPI
Tools: VS Code, Git