# Karanbir Singh Pelia

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## Education

**Stony Brook University** Stony Brook, NY | ***Aug 2024 – May 2026***
*Master of Science, Computer Science*
**Coursework:** Data Science, Human-Computer Interaction, Computer Graphics, Computational Biology, Database Systems

**Savitribai Phule Pune University (University of Pune)** Pune, MH | ***Sep 2020 – Jun 2024***
*Bachelor of Engineering, Computer Engineering* (GPA: 9.11/10)
**Coursework:** Software Engineering, Data Structures and Algorithms, Systems Programming and Operating Systems, Object Oriented Programming, Database Systems, Big Data Analytics, Artificial Intelligence, Machine Learning, Deep Learning

## Experience

**Infrrd Inc.** | *Software Developer Intern* San Jose, CA | ***May 2025 – Nov 2025***
- Built automated test pipelines for document classification and extraction, enabling accuracy tracking and model performance evaluation.
- Resolved backend issues by debugging Python workflows and analyzing logs, improving system stability and deployment readiness.
- Enhanced classification and extraction accuracy by refining LLM prompts and optimizing backend logic for latency and reliability.
- Developed a full-stack internal testing tool using FastAPI, designing multi-endpoint backend APIs and a responsive web-based frontend.
- Implemented new backend logic for classification and extraction pipelines, extending functionality and supporting evolving doc types.

**Stony Brook University** | *Graduate Research Assistant* Stony Brook, NY | ***Jan 2025 – Present***
- Explored visual storytelling with Prof. Klaus Mueller to enhance infographic communication through iterative feedback.
- Evaluated LLMs' alignment with human cognition in interpreting data visualizations, utilizing analytical methods and AI-based testing to iteratively improve output accuracy.

**Campus Credentials** | *Data Analytics Trainee* Pune, MH | ***Jan 2023 – Feb 2023***
- Automated data workflows using Python, MySQL, and Pandas to streamline processing and reduce turnaround time.
- Developed insightful data visualizations that enhanced decision-making and clearly communicated analytical findings.
- Collaborated with cross-functional teams to apply data science solutions, showcasing strong communication and swift implementation.

## Projects

**Site to Slides** | Webpage-to-Presentation Converter ***Mar 2025 – Apr 2025***
*Technologies: Python, Firecrawl API, REST APIs, Web Scraping, Browser DevTools*
- Developed an automation script that scrapes any public webpage using Firecrawl API and generates a shareable Alai presentation link.
- Reverse-engineered undocumented Alai API endpoints through browser network inspection to automate presentation creation.
- Implemented periodic access token renewal to maintain authenticated sessions, ensuring smooth multi-step API execution.
- Focused on parsing meaningful webpage content and structuring it into coherent slides, enabling simplified content summarization.

**Fatigue Sense** | Driver Fatigue & Ergonomics Monitor ***Oct 2024 – Nov 2024***
*Technologies: MediaPipe, TensorFlow, OpenCV, NumPy, Python*
- Developed a real-time driver monitoring system to detect fatigue and poor posture with 95% accuracy.
- Implemented facial landmark tracking and EAR analysis for precise fatigue detection and adaptive thresholding.
- Built an integrated system combining facial detection, pose estimation, and ML for real-time safety alerts.

**AgroDoc** | Plant Disease Recognizer ***Sep 2023 – Mar 2024***
*Technologies: TensorFlow, Keras, OpenCV, Streamlit, NumPy*
- Developed a custom novel CNN architecture, achieving 97.38% accuracy across 38 plant conditions using over 80,000 images.
- Implemented data augmentation and learning rate scheduling to improve model generalization, enhancing performance.
- Deployed the model with Streamlit for interactive visualization, showcasing its potential in explainable AI for agriculture.

**Sentiment Analysis of Restaurant Reviews** ***May 2023 – Jul 2023***
*Technologies: Python, Scikit-Learn, NLTK, Pandas, Matplotlib*
- Developed a sentiment classification model that achieved 77% accuracy on real-world restaurant reviews.
- Applied NLP techniques, including tokenization, stemming, and sentiment scoring, to analyze text data.
- Visualized sentiment trends to improve customer satisfaction, adhering to explainable AI principles.

**Music Recommendation System** ***Mar 2023 – Apr 2023***
*Technologies: Python, Firecrawl API, REST APIs, Web Scraping, Browser DevTools*
- Built a personalized recommendation system combining collaborative and content-based filtering approaches.
- Used clustering techniques to enhance recommendation relevance, resulting in a improvement in user satisfaction.
- Focused on explainable recommendation logic, presenting users with transparent rationales for each suggestion.

## Technical Skills

**Programming Languages:** Python, Java, C++, SQL, HTML, CSS, JavaScript
**Tools and Platforms:** TensorFlow, Keras, OpenCV, Mediapipe, NLTK, NumPy, Pandas, Scikit-Learn, Matplotlib, Seaborn, Streamlit, Flet, FastAPI, VS Code, Git, GitHub, MongoDB, REST APIs, Firecrawl, React, XAMPP, Grafana, Jenkins
**Other:** NLP, Computer Vision, Data Visualization, Data Pipelines, Data Analytics, Web Scraping, Backend Optimization, Prompt Engineering, LLM-Based Development, API Development, HTTP Requests, Browser DevTools, SEO, Google Workspace, Microsoft Office, Communication Skills, Collaborative Skills