Karanbir Singh Pelia

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Education

Stony Brook University   *Aug 2024 – May 2026*
Master of Science, Computer Science
Coursework: Data Science Fundamentals, Foundations of Human-Computer Interaction, Computer Graphics, Computational Biology

Savitribai Phule Pune University (University of Pune)   *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

Stony Brook University | *Graduate Research Assistant*   *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*   *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.

Rotaract Club of Dr. D. Y. Patil Unitech Society | *Database Head*   *Mar 2022 – Apr 2022*
- Streamlined participant data collection by automating processes with Google Forms and Sheets, efficiently optimizing data pipelines.
- Led data-driven social media campaigns that enhanced engagement and increased event attendance.
- Coordinated event logistics and improved operational efficiency through meticulous data analysis and workflow refinement.

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, VS Code, Git, GitHub, XAMPP, DALL-E 2 API, REST APIs, Firecrawl, React
Other: Natural Language Processing, Computer Vision, Data Visualization, Data Pipelines, Data Analytics, Web Scraping, HTTP Requests, Browser DevTools, SEO, Google Workspace, Microsoft Office, Communication Skills, Collaborative Skills, Prompt Engineering, LLM-Based Development