JALPAN VYAS

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WEBSITES, PORTFOLIOS, PROFILES

- linkedin.com/in/jalpan04
- github.com/Jalpan04
- jalpan04.github.io/Jalpan-Vyas

SUMMARY

Machine Learning Engineer Student with expertise in developing comprehensive AI systems, including diffusion models and custom neural networks. Proficient in deep learning and data engineering, with a focus on scalable deployment in web and cloud environments. Recognized for producing high-quality, production-ready ML solutions through efficient engineering practices and a strong research-oriented approach.

SKILLS

- Deep learning frameworks: PyTorch, TensorFlow, Keras
- Machine learning techniques: Scikit-learn, Genetic algorithms
- Data manipulation: NumPy, Pandas
- Model architectures: Autoencoders, CVAE, Transformers
- Attention mechanisms and tokenization
- Reinforcement learning: DQN
- Computer vision tools: OpenCV, MediaPipe
- Image processing and feature engineering
- Web frameworks: FastAPI, Flask, Django
- Frontend technologies: React, Next.js, TailwindCSS
- JavaScript and Canvas APIs
- Version control and collaboration: Git, GitHub Pages
- Containerization and orchestration: Docker
- Operating systems: Linux
- Development environments: VS Code
- Database management: SQL, PostgreSQL, MongoDB
- Web technologies: HTML5, CSS3
- Data visualization libraries: Matplotlib, Seaborn
- Generative models and NLP techniques

EDUCATION

B.Tech: Computer Science Engineering

Karnavati University – Gujarat

Started in 07/2021 | Expected Graduation: 2027

CERTIFICATIONS

- Intro to Machine Learning, Kaggle, 29/10/25
- Image Processing Omsrgp, Math&Works, 21/11/23
- Data Visualization: Best Practices, LinkedIn Learning, 15/08/25
- Learning Git and GitHub, LinkedIn Learning, 23/09/25

PROJECTS

Machine learning and generative AI

- Pixel Diffusion Model – Conditional DDPM for 16×16 pixel art with cosine schedule, U-Net + attention, EMA weights, CFG, and Gradio demo
- PixelDrawNet – custom NumPy neural network (784→128→128→10) with 95.97% accuracy, full training loop, and interactive canvas UI
- Handwritten digit generator (CVAE) – conditional VAE for controlled MNIST digit generation
- Gujarati author attribution – transformer + LSTM authorship classifier with hosted model
- Game of Life pattern classifier – K-means clustering of emergent patterns with Streamlit visualization
- Color palette extractor – K-means dominant color extraction using scikit-learn, PIL, and Gradio

Reinforcement learning and agents

- DQN snake agent – deep Q-learning agent trained in a custom Pygame environment
- Asteroids genetic agent – neural-evolution agents optimized using genetic algorithms

Computer vision and data science

- Sign-Lang-Translator – Real-time ASL recognition using MediaPipe and neural networks
- Blob tracker – motion and color tracking using OpenCV
- Spotify EDA – analytical breakdown of streaming behavior using Python

SELECTED OTHER PROJECTS

- Automated Classification of Game of Life Patterns using K-Means + custom ML pipeline
- Dominant Color Palette Extractor using K-Means (scikit-learn, PIL, NumPy) with Gradio UI
- VinylSpace (MERN Stack): Music album review and rating platform with Spotify API
- BabelPathAI (FastAPI): Deterministic hashing-based API inspired by 'The Library of Babel'
- Identity (.NET): Windows Forms application for cataloging books, movies, and music

ADDITIONAL INFORMATION

Open-source contributor on GitHub and Hugging Face. Experienced in building full-stack ML applications and interactive visual systems.

- kaggle.com/jalpan04
- huggingface.co/jalpan04