Nandan Patel

+91-9426268778 | napassociate@gmail.com | linkedin.com/in/patel-nandan/ | github.com/NandanPaT-eL

Summary

AI Engineer skilled in Python and PyTorch with expertise in developing GAN-based data augmentation pipelines, dual-subnetwork NILM architectures, and RAG-driven chatbots. Proven ability to build API-enabled machine learning solutions that boost model robustness and deliver measurable energy savings. Seeking to leverage ML fundamentals and software best practices in Python AI Engineer roles.

Skills

- **Programming Languages:** C/C++, C#, Java, JavaScript, Python, PHP
- **Database & Cloud:** MySQL, AWS S3, Firebase Storage
- **Data Science & Machine Learning:** NumPy, Pandas, BeautifulSoup, Matplotlib, Seaborn, Scikit-learn, ML Frameworks
- **Deep Learning:** PyTorch, CUDA
- **Computer Vision & AI:** OpenCV, MediaPipe
- **NLP & Agentic AI:** RAG, LangChain, Hugging Face Transformers, spaCy, Google Gemini API, Llama
- **Embedded Systems:** Raspberry Pi, ESP32-S3
- **Version Control & Collaboration:** Git, GitHub
- **Software Development & Engineering:** OOP, Testing, API Development

Education

G. H. Patel College of Engineering and Technology, Anand **2022 - 2026**
Bachelor's, Computer Engineering (GPA: 9.56 (up to VI SEM)) *Anand*

Certifications

- SAP Advanced: SAP | Issued April 2025 | Skills: Machine Learning, Internet of Things (IoT), Deep Learning, Computer Vision, ABAP

Work History

ISRO: Space Applications Centre (SAC) **Jan 2026 - Present**
Machine Learning Intern

- Working on Generative Adversarial Networks (GANs) using OOP principles to extend and enhance the PLC database, improving data diversity, robustness, and downstream model performance.
- Designing and experimenting with GAN-based data generation pipelines with unit testing to support large-scale industrial and research applications.
- Collaborating with research engineers to analyze data distributions, optimize model stability, and validate synthetic data quality.
- Technologies: PyTorch, Python, GANs, Deep Learning, Data Augmentation, CUDA

EnergInAI **Oct 2025 - Nov 2025**
Machine Learning Intern

- Engineered a novel Dual-Subnetwork NILM architecture from scratch in PyTorch, integrating Self-Attention and parallel Dilated Convolutions, and packaged the model as a RESTful API to precisely map aggregated mains power (Seq2Point) to AC consumption and operational status.
- The solution enables an estimated 15% energy savings for commercial clients through reliable peak demand management.
- Technologies: PyTorch, Python, CNNs (Dilated), Self-Attention, CUDA, Pandas, scikit-learn, pytest

Center of Excellence: Digital Manufacturing, BVM (IITD-FSM Internship, AIA Foundation) **May 2025 - Aug 2025**
Artificial Intelligence Intern

- Developed an intelligent chatbot using RAG (Retrieval-Augmented Generation) pipeline for context-grounded responses
- Integrated LangChain, Llama-3, and Chroma vector database to enable domain-specific document retrieval and built API backend
- Technologies: FastAPI, LangChain, Llama-3, Chroma, HuggingFace, RAG, SpeechRecognition

Project Work

KRAKEN Submersible ROV | GITHUB_LINK | ***Robofest 4.0*** **Mar 2024 - Jan 2025**

- Secured competitive grant funding of ₹2.5 Lakh and led system architecture & integration of fully functional underwater ROV
- Implemented computer vision for barcode detection and established real-time web interface to Pi and Pi to ESP32 data exchange

Skin Cancer Classification Model | GITHUB_LINK **Feb 2025 - Apr 2025**

- Developed deep learning model using ResNet50 for skin cancer classification with high accuracy
- Applied transfer learning, data augmentation, and hyperparameter tuning for improved performance and deployed lightweight model for real-time edge inference

Virtual Try-On System | GITHUB_LINK **Jan 2025 - Apr 2025**

- Developed AI-powered virtual try-on system using MODNet for precise background removal and GAN-based clothing warping

Achievements

- **Robofest 4.0 Finalist:** Led KRAKEN ROV team, securing ₹2.5 Lakh grant.
- **5G Innovation Hackathon:** Won ₹1 Lakh seed funding, organized by DoT, Govt. of India.