

BUVANI PAI

+1 (872) 239-1418 | buvanipai@gmail.com | [LinkedIn](#) | [Github](#)

EDUCATION

Northwestern University , Evanston, Illinois	Sep 2023 – Dec 2024
Master of Science in Computer Science (Focus: Artificial Intelligence & Machine Learning)	CGPA: 3.71/4.0
Rajiv Gandhi Institute of Technology , Mumbai University, India	Aug 2019 – Jun 2023
Bachelor of Engineering in Computer Engineering	CGPA: 3.64/4.0

SKILLS

- **AI/ML Frameworks:** PyTorch, TensorFlow, Scikit-learn, Pandas, NumPy, NetworkX, spaCy, NLTK
- **Development & Cloud:** Django, Node.js, Express.js, React.js, Git, Docker, AWS, Streamlit, Gradio
- **Programming Languages:** Python, JavaScript, SQL, Java, R, C

WORK EXPERIENCE

AI/ML Engineer (Volunteer) Happy World Foundation, Inc.	Aug 2025 – Present
<ul style="list-style-type: none">• Designing Python matching algorithm to automate volunteer-teacher pairing based on language, timezone, and availability for classroom exchanges across 40+ countries.• Building request pipeline consolidating web, Instagram, and email inquiries, reducing manual coordination by 70% and enabling same-week responses.• Redesigning website infrastructure, refactoring navigation and core pages to improve usability for a nonprofit platform connecting educators with volunteers worldwide.	
AI Engineer Argonne National Laboratory	Jan 2025 – Jun 2025
<ul style="list-style-type: none">• Fine-tuned a pre-trained conditional diffusion U-Net combining image and spectral data, collaborating with supervisors to ensure alignment across modalities.• Constructed preprocessing pipelines (normalization, truncation, and filtering) for 300k+ galaxy images and spectra, enhancing spatial-spectral alignment by 12%.• Accelerated model training from one week to 20 hours by optimizing distributed 8-GPU workflows with adaptive learning strategies, ensuring reliable model performance through systematic troubleshooting.	

ACADEMIC PROJECTS

Agentic CRM Entity Resolution Pipeline	Nov 2025 – Dec 2025
<ul style="list-style-type: none">• Engineered a graph-based deduplication system using LLM reasoning and NetworkX clustering to resolve ambiguous customer identities, achieving 96% F1 score and 92% recall with zero false merges.• Designed hybrid blocking and batch inference pipeline under rate limits, reducing database redundancy by 28% through BFS-connected component analysis while maintaining full provenance tracking.• Implemented few-shot prompt engineering with hard negative examples to prioritize precision over recall, maintaining 95% average confidence across predictions through conflict detection logic before semantic matching.	
Multi-Agent Text-to-SQL System	Apr 2025 – May 2025
<ul style="list-style-type: none">• Conceptualized & built a three-agent pipeline (decomposer, refiner, selector) to translate natural-language queries into SQL across 11 SQLite schemas, documenting decisions for clarity.• Iterated on few-shot prompts and sampling parameters, testing diverse NL queries to boost SQL validity by 30% and the Valid Efficiency Score to 61% from 55%.• Added schema-aware repair loops with metadata-driven validation, improving table & column match rate by 12% and execution accuracy to 58% from 53%.	
Mars Landmark Detection	Jun 2024 – Aug 2024
<ul style="list-style-type: none">• Collaborated with two teammates to address severe class imbalance in an 8 K-image Mars landmark dataset via targeted data augmentation, tripling underrepresented class counts.• Developed a two-stage CNN pipeline (detecting landmark presence then classifying type) with class-weighted training, coordinating design choices with peers.• Achieved 75.5% accuracy and 0.74 F1-score, outperforming ResNet50 at 67% and DenseNet121 at 52%, validating the augmentation and class-weighting strategies.	

PROFESSIONAL DEVELOPMENT & CERTIFICATIONS

- Google Cloud + Endava Hackathon - Agentic AI Product Launch, **2nd Place** (Sept 2025)
- Amazon Campus Prep Series - Amazon University Event (2025)
- Building RAG Agents with LLMs - NVIDIA (In Progress, 2025)
- Generative AI with Diffusion Models - NVIDIA (In Progress, 2025)