

Rubi Khatri

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AI/ML Engineer specializing in computer vision, geospatial intelligence, and transformer-based models. Experienced in building scalable ML pipelines, deploying production AI solutions, and integrating LLM/VLM technologies. Published researcher with expertise in satellite/UAV imagery analysis, segmentation, and multimodal AI systems.

Professional Experience

Graduate Assistant- Office of Innovation Management, UL Lafayette, Lafayette, Louisiana **Aug 2025 - Present**

- Maintained an IP database containing hundreds of patents and trademarks.
- Developed a web platform for querying and updating IP records, reducing lookup time by 40%.
- Researched AI in IP commercialization, including patent analysis and technology market matching
- Collaborated with researchers and entrepreneurs via the LEED Center on innovation and tech transfer projects.

GeoAI Associate- NAXA Pvt Ltd. , Kathmandu Nepal **Dec 2023- Dec 2024**

- Processed and curated thousands of geospatial samples for analysis and modeling.
- Built climate risk assessment models using household, building, and socio-economic datasets.
- Trained models using 10+ architectures (U-Net, InceptionNet, ResNet, VGG, YOLO, ViT, MedT, TransUNet, SAM).
- Developed models for land cover classification, disaster risk analysis, and environmental monitoring.
- Utilized LLMs and VLMs (Moondream2) for query automation, captioning, and object search.
- Built machine learning pipelines and model deployment for a platform serving trained geospatial models.
- Led research collaboration and supervised junior team members on ML projects and model deployment tasks.

GeoAI fellow- NAXA Pvt Ltd. , Kathmandu Nepal **Sept 2023- Dec 2023**

- Researched on ongoing problems in Nepal that can be solved using AI and Aerial Imagery.
- Labeled and segmented 5,000+ geospatial samples for model training.
- Trained models using U-Net, InceptionNet, ResNet, VGG, and YOLO architectures.
- Performed feature extraction and change detection across large-scale satellite imagery.
- Conducted research collaboration with international mentors across 3 global projects.
- Contributed to open-source tools for urban planning and damage assessment.

AI Fellowship, FuseMachines, Kathmandu, Nepal **Jan 2023-Dec 2023**

- Completed 4 major ML/DL projects applying supervised, unsupervised and deep learning methods.
 - Accomplished Microdegree Specialization in Natural language Processing and Computer Vision.
 - Gained Deeper Understanding of various algorithms with their mathematical foundation.
 - Applied ML techniques to dataset ranging from 5k-50k samples.
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Publications

WildFire Detection From Landsat-8 Images Using Vision Transformer

Presented at the 6th International Conference on Computer Vision and Computational Intelligence, 2025 (CVCI 2025).

Published in ACM Proceedings.

DOI: <https://dl.acm.org/doi/full/10.1145/3744725.3744728>

Key Projects & Research

Fine-tuning SAM for Prompt-Based Medical Image Segmentation of Abdominal Organs

- Built a segmentation model for abdominal MRI organs using a fine-tuned SAM architecture.
 - Adapted SAM for multi-class segmentation by freezing the encoder and training a custom decoder.
- Technologies:** Python, PyTorch, SAM, MONAI, CHAOS Dataset, wandb

Post-Disaster Rapid Damage Assessment using UAV Imagery

- Developed a UAV-based assessment pipeline for disaster recovery and planning.

- Trained YOLO models on labeled UAV datasets, and generated damage hotspot maps.

Technologies: Python, UAV Imagery, YOLO, Geonadir, CVAT, S3, Roboflow

WildFire Detection From Landsat8 Images Using Vision Transformer

- Developed a wildfire detection framework using Landsat-8 satellite images.
- Trained ViT-TransUNet, MedT, and U-Net models for fire segmentation.

Technologies: Landsat-8, ViT, TransUNet, U-Net, MedT, OneCycleLR

LLM Based Text to SQL for GIS Web Application for Tokha Municipality

- Developed a text-to-SQL model to query GIS databases for features.
- Designed and deployed production-ready ML pipeline integrating LLM with GIS database systems.

Technologies : Python, Text-to-SQL, Langchain, Langgraph, GIS , PostgreSQL

Skills

- **Programming:** Python, C/C++
- **Frameworks:** PyTorch, TensorFlow, Django, FastAPI
- **Libraries:** Scikit-Learn, Pandas, NumPy, Matplotlib, OpenCV, Geopandas, rasterio, Streamlit, LangChain, LlamaIndex
- **Tools:** Sagemaker, Plotly, Seaborn, Pillow
- **Databases:** PostgreSQL, MySQL, Firebase
- **Cloud & DevOps:** AWS, Docker
- **Version Control:** Git, GitHub
- **AI/ML:** Machine Learning, Deep Learning, Computer Vision, Natural Language Processing(NLP), Data Analysis, Machine Learning Pipelines, Model Deployment, MLOps
- **Geospatial/GIS:** QGIS, Google Earth Engine, ArcGIS, MapLibre, Geospatial Data Analysis
- **Remote Sensing:** Image Classification, Change Detection, LULC Mapping, SAR & Optical Processing

Education

Masters in Science- Computer Science

Expected December 2026

University of Louisiana at Lafayette, Lafayette, Louisiana

GPA- 4.0/4.0

Bachelors in Engineering - Computer Engineering

August 2023

Nepal College of Information Technology, Balkumari

GPA- 3.81/4.0

Training And Certification

- [Artificial Intelligence](#) - Fusemachines
- [Machine Learning](#) - Fusemachines
- [Deep Learning](#) - Fusemachines
- [Natural Language Processing](#) - Fusemachines
- [Computer Vision](#) - Fusemachines
- [Deep Learning with python](#) - Broadway Infosys
- [Pandas](#) - Kaggle
- [Feature Engineering](#) - Kaggle
- [Time Series](#) - Kaggle
- [AWS Academy Cloud Foundation](#) - AWS
- [Programming for Everybody \(Getting started with Python Python data structures\)](#) - University of Michigan (Coursera)
- [Python Data Structure](#) - University of Michigan (Coursera)
- [Using Python to Access Web Data](#) - University of Michigan (Coursera)