Ramkrishna Acharya

Machine Learning Researcher | M.Sc. in Data Science at FAU
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Research Interests

Reliable ML Robust and explainable ML for anomaly detection under adversarial and real-world constraints
Intelligent Systems AI-based predictive monitoring and decision support for industrial and cyber-physical systems
Data-Centric AI Synthetic data generation and data-efficient learning for scarce and noisy data

Education

Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) — *Erlangen, Germany*
M.Sc. Data Science, German grade scale: 1.8 (Good) — *2022 – 2025*

- **Thesis:** *Enhancing Smart Grid Security: A Deep Learning Approach to Adversarial Intrusion Detection* | Code
- **Supervisor:** Dr.-Ing. Loui Al Sardy, Assistant Professor (Asst. Prof.)
- **Focus:** Applied machine learning and deep learning

Tribhuvan University — *Kathmandu, Nepal*
B.Sc. Computer Science and Information Technology, grade: 72.07/100 (First Division) — *2015 – 2019*

- **Research Project:** *Devanagari Handwritten Character Recognition* | Code
- **Focus:** Image processing and neural networks

Recent Experiences

Upwork — *Remote*
Freelance Data Scientist (Profile) — *May 2026 – Present*

- Developing real-time computer vision solutions for anomaly detection and deployable surveillance systems
- **Stack:** Python, OpenCV, Django, PyTorch, Docker, Git.

Master's Research | FAU — *Erlangen, Germany*
Research focus on applied machine learning, cyber-physical security, and anomaly detection — *2024 – 2026*

- Academic research projects covering representation learning (SAM-based segmentation), optimization methods (large-scale least squares), and multimodal data analysis for Digital Humanities
- Developed AI-based intrusion detection for cyberphysical systems, emphasizing adversarial robustness and novel attack detection
- Resulted in one journal publication and one follow-up paper currently under review

Primetals Technologies Germany GmbH — *Erlangen, Germany*
Working Student – Computer Vision — *May 2023 – Mar. 2026*

- Built deep learning proofs-of-concept for anomaly detection in industrial environments
- Developed synthetic data generators for OCR and segmentation under limited-data conditions
- Implemented evaluation pipelines with FastAPI and SQL, saving more than 100 hours of video analysis
- Benchmarked TimeSeries, OCR, and anomaly-detection models, e.g., TimesFM, GLMOCR, STFPM, PatchCore, and PaDiM

Older Experiences

- **Chair for Computer Science 7, FAU Erlangen-Nürnberg**, Student Assistant, Erlangen, Germany — Oct. 2025 – Mar. 2026
- **Upwork**, Freelance Data Scientist, Remote — Jan. 2022 – Oct. 2022
- **Extensodata Pvt. Ltd.**, Associate Data Scientist, Kathmandu, Nepal — Aug. 2021 – Aug. 2022
- **diyo.ai**, Unity3D Development Intern, Kathmandu, Nepal — Nov. 2020 – Mar. 2021
- **MPercept Technology**, AI Developer Intern, Kathmandu, Nepal — Aug. 2019 – Jan. 2020

Publications

[1] **Ramkrishna Acharya**, Loui Al Sardy, Mamdouh Muhammad, Reinhard German
ADVIS-G: An Adversarially Defended Intrusion Detection System for Smart Grids Using Deep Learning
KI – Künstliche Intelligenz, 2026. DOI | Code

[2] **Ramkrishna Acharya**, Loui Al Sardy, Mamdouh Muhammad
ROSAID-ST: Adversarially Robust Intrusion and Anomaly Detection in ROS Networks via Student-Teacher Deep Learning
International Journal of Advanced Robotic Systems, under review, 2026. Journal | Code

Recent Projects

- **Session Feature Extractor** (2026): PyPI tool for extracting image features from network traffic (PCAP)
- **Image Baker** (2025): PyPI tool for annotation and synthetic data generation for anomaly detection
- **SmokeSim** (2024): PyPI package for smoke simulation, image augmentation, and segmentation
- **Neural Template Matching** (2024): custom U-Net experiment for template matching on the COCO dataset

Skills

Programming Python (advanced), SQL, Bash, JavaScript (basic), C# (basic)
Machine Learning PyTorch, TensorFlow, Scikit-learn, HuggingFace, MMEngine, OpenCV, MLflow, DVC, ONNX, TensorRT
ML Systems Docker, Git/GitHub, MLflow, DVC, ONNX, TensorRT, Apache Airflow, FastAPI, Flask, Streamlit, PostgreSQL, MySQL, Firestore, AWS EC2, Linode, GitHub Actions, GitLab CI/CD, Apache Superset

Languages

English (C1), German (A2), Nepali (Native)