

Javad Sheikh

AI Engineer | Computer Vision & Geospatial ML

✉ mail: Javshe@utu.fi

☎ phone: +358465698472

🐙 GitHub

🌐 LinkedIn

📍 location: Turku, Finland

🌐 Homepage

SUMMARY

AI engineer with deep expertise in computer vision, geospatial machine learning, and remote sensing. Developed and deployed ML pipelines for maritime monitoring and mineral exploration, with a strong focus on segmentation, fusion models, and domain adaptation. Proven experience in building CNN architectures, integrating ML into mobile apps using TensorFlow Lite, and collaborating with industry partners to deliver scalable AI solutions.

EMPLOYMENT HISTORY

- 2022 – Present 📌 **Doctoral Researcher** Department of Computing, University of Turku, Turku, Finland
- Developed computer vision pipelines for sea ice segmentation and forecasting in the **AI-ARC project** using multi-source satellite data (SAR + AMSR2).
 - Led spatial ML modeling for mineral prospectivity in the **EIS project**, employing CNNs, random forests, and Bayesian NNs with spatial validation and uncertainty quantification.
 - Integrated ML pipelines into the EIS Toolkit for QGIS to support sustainable mineral exploration.
 - Advanced deep learning methods for drill-core segmentation, hyperspectral analysis, and borehole data fusion in the **AIMEX project**.
 - Proposed **SEDA**, a similarity-enhanced data augmentation technique to address class imbalance in geoscientific datasets.
 - Authored 7+ peer-reviewed publications on applied AI in geoscience and remote sensing.
- 2018 – 2019 📌 **Mobile Application Developer**, Sibbank, Tehran, Iran
- Built and deployed an OCR SDK for Android used by the Agriculture Bank of Iran.
 - Optimized CNN models for low-latency edge inference via TensorFlow Lite.
 - Ensured robust performance across devices through extensive testing and collaboration.

EDUCATION

- 2023 – Now 📌 **D.Sc. in Information and Communication Technology**, University of Turku, Turku, Finland.
Thesis title: *Advanced semantic segmentation of remote sensing data for Maritime and Mining applications*
- 2018 – 2021 📌 **M.Sc. in Artificial Intelligence and robotics** Amirkabir University of Technology, Tehran, Iran.
Thesis title: *Anomaly detection on time series using deep neural networks*.
- 2013 – 2018 📌 **B.Sc. in Biomedical Engineering** Amirkabir University of Technology, Tehran, Iran.
Thesis title: *Design and Implementation of mobile room lighting control equipment for patients with paraplegic patients*.

TECHNICAL SKILLS

- 📌 **Programming:** Python, C++, Java, SQL
- 📌 **Deep Learning:** PyTorch, TensorFlow, TensorFlow Lite, Keras
- 📌 **Computer Vision:** OpenCV, CNNs (Unet, DenseNet, MobileNet), segmentation, fusion models

TECHNICAL SKILLS (CONTINUED)

- **Geospatial / Remote Sensing:** SAR, AMSR2, QGIS, satellite imagery processing
- **Machine Learning / Data Science Tools:** Scikit-learn, Pandas, NumPy, Git, GitHub, Docker, Azure
- **Deployment & MLOps:** Android SDK, Docker, TensorFlow Lite, basic MLOps workflows

SELECTED PUBLICATIONS

- 2025 ■ **Sheikh, J.**, et al., *SEDA: Similarity-enhanced data augmentation for imbalanced learning*, In: Pattern Recognition, Springer, 2025. DOI: 10.1007/978-3-031-78395-1_3
Proposed a novel augmentation method for improving robustness of visual classifiers under severe class imbalance.
- 2024 ■ Farahnakian, F., **Sheikh, J.**, et al., *Addressing imbalanced data for machine learning based mineral prospectivity mapping*, Ore Geology Reviews, 2024. DOI: 10.1016/j.oregeorev.2024.106270
Applied ML to low-sample, noisy geospatial datasets under extreme class imbalance; techniques transferable to constrained computer vision tasks.
- 2023 ■ **Sheikh, J.**, et al., *Ice-water segmentation using deep convolutional neural network-based fusion approach*, In: 2023 28th International Conference on Automation and Computing (ICAC). DOI: 10.1109/ICAC57885.2023.10275247
Trained CNN fusion models for multi-source segmentation under low resolution and low contrast conditions.
- **Sheikh, J.**, et al., *Sea Ice Concentration Estimation via Fusion of Sentinel-1 and AMSR2 Based on Encoder-Decoder Architecture*, In: 2023 IEEE 26th International Conference on Intelligent Transportation Systems (ITSC). DOI: 10.1109/ITSC57777.2023.10422541
Built encoder-decoder models to estimate ice concentration using heterogeneous satellite imagery.
- Full publication list on my Google Scholar.

TEACHING EXPERIENCE

- Spring 2024 ■ **Teaching Assistant for Computer Vision and Sensor Fusion**, Department of Computing, University of Turku, Turku, Finland.
- Spring 2025 ■ **Matlab Teaching Assistant**, Department of Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran.
- Spring 2015 ■ **Matlab Teaching Assistant**, Department of Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran.

PROJECTS

- 2021 ■ **Retinopathy Detection Android App**
Developed an Android app for detecting diabetic retinopathy by retraining a DenseNet model. Deployed using TensorFlow Lite for real-time inference on entry-level phones under variable lighting conditions.
- 2020 ■ **Automatic Weighing Lysimeter System**
Designed and assembled a sensor-based embedded system for soil moisture monitoring. Built the full hardware-software pipeline, including data acquisition, logging, and wireless transmission.
- **Brain Surgery Bipolar Electrocautery Simulator**
Co-developed a haptic surgical simulator with real-time force feedback. Modeled tool-tissue interactions and implemented embedded control for electrosurgical training.

REFERENCES

Prof. Jukka Heikkonen

Professor
University of Turku,
Email: Jukka.Heikkonen@utu.fi
Phone: +358 415 271 693

Dr. Fahimeh Farahnakian

Associate Professor
The Geological Survey of Finland,
Email: fahimeh.farahnakian@gtk.fi
Phone: +358 295 030 135