

JENBERIA, Getnet Demil

AI, Image Processing and Computer Vision, PhD Candidate

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University of Oulu, Finland

Profile

Getnet is a GeoAI researcher specializing in applying advanced machine learning and deep learning techniques to remote sensing and spatial data analysis. With expertise spanning earth observation, hydrology modeling, and climate applications, he develops innovative AI solutions that address complex environmental challenges. Proficient in Python, C++, and MATLAB, along with modern deep learning frameworks (TensorFlow, PyTorch, Keras), he leverages satellite imagery, geospatial data, and computer vision to create actionable insights for water resource management, climate resilience, and environmental monitoring. His work bridges AI, geospatial intelligence, and climate science to advance sustainable solutions.

Education

PhD in Artificial Intelligence and Remote Sensing Technology for Hydrology Modeling, University of Oulu 2024 – present
Oulu, Finland

Triple master's degree in Image Processing and Computer Vision 2022 – 2024
• *University of Bordeaux, France* France, Spain, Hungary
• *Autonomous University of Madrid, Spain*
• *Pazmany Peter Catholic University, Hungary*

MSc in Communication System Engineering, Bahir Dar University 2020 – 2022

B.SC. in Electrical Engineering, Major in Electronics and Communication System, Bahir Dar University 2013 – 2018
Bahir Dar, Ethiopia

Skill

Programming Language and Frameworks Python, C++, MATLAB, Keras, OpenCV, TensorFlow, PyTorch, and JavaScript	● ● ● ● ●	Academic Skill Image Processing, Computer Vision, Deep Learning, ML, AI, Remote Sensing, GIS, GEE	● ● ● ● ●
Operating System Window, Linux, Debian, Ubuntu	● ● ● ● ●	Language Skill English, Amharic, and Spanish (A1)	● ● ● ● ●

Professional Work Experience

Doctoral Researcher in Artificial Intelligence and Remote Sensing Technology for Hydrology Modelling, University of Oulu present
Oulu, Finland

Computer Vision Research on Deep Learning Based Estimation of Hydrology Parameters, University of Oulu 2024
Oulu, Finland

Current Research


Artificial Intelligence and remote Sensing Technology for Hydrology Modeling, Finland

I'm researching AI and remote sensing for hydrology modeling. I use image processing of satellite data to determine snow water characteristics. This improves hydrological modeling, water resource management, and climate change strategies, using deep learning for accuracy.


Publications

Advances in image-based estimation of snow variable: A systematic literature review on recent studies , Journal of Hydrology, May, 2024

A comprehensive literature review discusses image-based estimation of snow hydrology parameters, emphasizing its importance for advancing snow hydrology modeling and environmental management. The review highlights the potential of deep learning architectures and uncertainty quantification techniques to revolutionize research in this field.

<https://doi.org/10.5194/egusphere-2024-1158> 


Seeing through the clouds: enhanced snow and cloud segmentation in sentinel-2 imagery with mDeepLabV3+, Earth Science Informatics

Developed a deep learning model for snow cloud segmentation based on satellite images. DOI: <https://doi.org/10.1007/s12145-025-01950-6> 

Conferences

Leveraging Social Media for Real-time Monitoring of Local Climate Impact, SIGIR 2024 Workshop on Information Retrieval for Climate Impact, 2024

Real-time monitoring of climate change impacts at the local level is increasingly vital. Social media provides timely, localized information and firsthand experiences, offering valuable insights into climate change effects on communities and ecosystems. Publication:

<http://dx.doi.org/10.48550/arXiv.2504.01162> 

AI-Enhanced Snow and Cloud Segmentation in Sentinel-2 Imagery Using Dilated DeepLabv3+ with ResNet Backbone , Nordic Workshop on AI for Climate Change, 2025

By employing a modified DeepLabv3+ with ResNet backbones for semantic segmentation of Sentinel-2 imagery, along with spectral band optimization and transfer learning, the model integrates Sentinel-1, DEMs, and reanalysis data. This approach achieves high accuracy in snow classification, outpacing other methods and providing open-source high-resolution estimates to support runoff prediction and climate resilience.

Major Project and Research

Deep Learning Based Snow Hydrology Parameter Estimation from Image Sensors, 2024

This project leverages findings from a published study to apply deep learning techniques for the estimation of snow hydrology parameters using imagery data. The objective is to establish a comprehensive data processing pipeline that encompasses critical phases, including data acquisition, model selection, training methodologies, and performance evaluation metrics.

Vision Aided Recognition of Objects to Grasp with a Robot Arm,

Object 6D Position Estimation, 2022- 2023

I performed 6D pose estimation using the DenseFusion model to help individuals with upper-limb disabilities pick up objects. We implemented pose estimation with RGB, depth, and binary mask images, creating a proprietary dataset using Unity and HTC VIVE headsets. This dataset contains vital information for the DenseFusion algorithm, including 3D modeling, intrinsic and extrinsic parameters, and RGB images. **See More** [↗](#)

Computer Vision Projects in Object Detection and Tracking, 2023

An implementation of two algorithms for object tracking based on the Kalman Filter is implemented, in C++ using the OpenCV library **See More** [↗](#)

Advanced Image Processing Method on UAV Images, 2023

The objective of this project was to perform semantic segmentation on the images of crop fields, background, and weeds. To achieve this, three different segmentation models were deployed U-Net, Attention U-Net, and DeepLabV3+. **See More** [↗](#)

3D Acquisition, Reconstruction and Inverse Problem, 2023

This project involves various acquisition and reconstruction projects, including 3D object and scene reconstructions.

3D Reconstruction of an Object/Scene with Camera Calibration and Feature Matching, 2023

Advanced Projects in People Detection and Biometric Recognition, 2023

Aerial Image Restoration and Land Type Identification System Using Customized Deconvolution and Texture Analysis, 2022

Design and Implementation of Smart Microscope For Automatic Protozoan Disease Detection and Diagnosis Using Python Programming Language, 2018

Awards

Best 50 African Project of the Year 2019, Africa Innovation Week 2019

Design and Implementation of a Smart Microscope for Protozoan Disease Automatic Detection and Diagnosis.

Best Bahir Dar University Project of The Year 2018, Bahir Dar University, Ethiopia

Design and Implementation of a Smart Microscope for Protozoan Disease Automatic Detection and Diagnosis.

References

Available upon request [↗](#)

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Please Check My Website and Github

<https://getnetdemil.github.io> [↗](#)