Getnet Demil **Jenberia**

AI & Computer Vision Researcher · PhD Candidate

University of Oulu, Finland

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Degrees

University of Oulu — *Oulu, Finland*

PhD in Artificial Intelligence and Remote Sensing Technology — *2024 – Present*

- Research focus: Hydrology modeling using AI and remote sensing; deep learning for snow water characteristics estimation from satellite imagery

Erasmus Mundus Joint Master's Degree Programme — *France, Spain, Hungary*

Erasmus Mundus Joint Master Degree (EMJMD) in Image Processing and Computer Vision — *2022 – 2024*

- University of Bordeaux, France
- Autonomous University of Madrid, Spain
- Pázmány Péter Catholic University, Hungary

Bahir Dar University — *Bahir Dar, Ethiopia*

MSc in Communication System Engineering — *2020 – 2022*

Bahir Dar University — *Bahir Dar, Ethiopia*

BSc in Electrical Engineering — *2013 – 2018*

- Major: Electronics and Communication Systems

Other education and expertise

Programming	Python, C++, MATLAB, JavaScript
Deep Learning	PyTorch, TensorFlow, Keras, OpenCV
Computer Vision	Image Processing, Object Detection, Semantic Segmentation, 6D Pose Estimation
Remote Sensing	GIS, Google Earth Engine, Satellite Image Analysis, Multi-spectral Processing
Systems	Linux (Ubuntu, Debian), Windows, Git, Docker

Language skills

Amharic	Native
English	Fluent (working language)
Spanish	Elementary (A1)

Current employment

University of Oulu, Faculty of Information Technology and Electrical Engineering — *Oulu, Finland*

Doctoral Researcher (Research Career Stage I) — *2024 – Present*

- Developing AI-driven methods for satellite image processing to determine snow water characteristics
- Integrating multi-modal sensing data (Sentinel-1, Sentinel-2, DEMs, reanalysis data)
- Enhancing hydrological modeling accuracy using deep learning techniques (PyTorch, TensorFlow)

Previous work experience

University of Oulu — *Oulu, Finland*

Computer Vision Research Associate — *2024*

- Established comprehensive data processing pipelines for hydrological parameter estimation
- Achieved breakthrough accuracy in snow classification using modified DeepLabV3+ architecture
- Developed novel deep learning models for snow-cloud segmentation in satellite imagery

Ethiopian Electric Utility — *Ethiopia*

Junior Electrical Engineer — *2018 – 2020*

- Full-time position in electrical power systems engineering

American Space Ethiopia (U.S. Embassy) — *Ethiopia*

Chief Technology Support — *2016 – 2018*

- Technology support at the American Space cultural center, U.S. Embassy in Ethiopia

Research funding and grants

University of Oulu — *Oulu, Finland*

Doctoral Researcher Position (funded) — *2024 – Present*

- Funded doctoral research position in AI and Remote Sensing Technology for Hydrology Modeling

European Commission (EACEA) — *EU*

Erasmus Mundus Joint Master Degree Scholarship — *2022 – 2024*

- Full scholarship covering tuition, travel, and living expenses for the EMJMD in Image Processing and Computer Vision across three European universities

Research output

Total publications: 5 (2 journal articles, 1 book chapter, 2 conference papers).

Advances in image-based estimation of snow variable: A systematic literature review on recent studies

Journal Article – Journal of Hydrology — *2025*

- Comprehensive review of image-based deep learning architectures for snow hydrology modeling
- DOI: 10.1016/j.jhydrol.2025.132855

Seeing through the clouds: enhanced snow and cloud segmentation in Sentinel-2 imagery with mDeepLabV3+

Journal Article – Earth Science Informatics — *2025*

- Novel deep learning model for accurate snow-cloud segmentation in satellite imagery
- DOI: 10.1007/s12145-025-01950-6

AI-based Approach in Early Warning Systems: Focus on Emergency Communication Ecosystem and Citizen Participation in Nordic Countries

Book Chapter – arXiv preprint — *2025*

- arXiv:2506.18926

Leveraging Social Media for Real-time Monitoring of Local Climate Impact — *Washington DC, USA*

Conference Paper – SIGIR 2024 Workshop on Information Retrieval for Climate Impact — *2024*

- DOI: 10.48550/arXiv.2504.01162

AI-Enhanced Snow and Cloud Segmentation in Sentinel-2 Imagery Using Dilated DeepLabv3+ with ResNet Backbone — *Copenhagen, Denmark*

Conference Paper – Nordic Workshop on AI for Climate Change — *2025*

- State-of-the-art accuracy in snow classification outperforming existing methods

Awards and honours

2022	**Erasmus Mundus Joint Master Degree Scholarship**, European Commission (EACEA)	*EU*
2019	**Best 50 African Project of the Year**, Africa Innovation Week	*Continental*
2018	**Best Bahir Dar University Project of the Year**, Bahir Dar University	*Ethiopia*

Scientific and societal impact

Snow Estimation Pipeline

Open-source research tools — *2024 – Present*

- Open-source high-resolution snow estimation pipeline supporting climate resilience and runoff prediction
- Research code and datasets shared via GitHub

Climate Impact Monitoring through Social Media Analytics

Societal application of AI research — *2024*

- Developed methodology bridging traditional climate monitoring and grassroots environmental observations

Smart Microscope for Automated Disease Diagnosis

Medical technology innovation — *2018 – 2019*

- Computer vision system for automatic protozoan disease detection, recognized as Best African Project 2019

Other merits

Vision Aided Recognition of Objects for Assistive Robotics

European Consortium Research Project — *2022 – 2023*

- 6D pose estimation using DenseFusion model for individuals with upper-limb disabilities
- Created proprietary dataset using Unity engine and HTC VIVE headsets with precise calibration
- RGB-D sensor fusion with binary mask integration for robust object manipulation

Advanced Semantic Segmentation for Precision Agriculture

Academic Research Project — *2023*

- Comparative analysis of U-Net, Attention U-Net, and DeepLabV3+ for agricultural applications
- UAV-based image processing pipeline optimized for precision agriculture workflows

References

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