Hameed Moqadam

PhD Candidate
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Objective

Looking for a challenging position to apply my expertise in glaciology, geophysics, machine learning, and data science. Focused on contributing to innovative research and practical solutions at the intersection of cryosphere, geophysical analysis, and computational methods.

Education

- **Alfred Wegener Institute / Constructor University Bremen** *09.2021 – 04.2025*
  Ph.D. in Glaciology & Computer Science Bremerhaven/Bremen, Germany
  ◦ Tracing Extended Internal Stratigraphy in Ice Sheets using Computer Vision Approaches.
- **Lappeenranta University of Technology (LUT)** *2014 – 2017*
  MS.c in Environmental Engineering Lappeenranta, Finland
  ◦ Thesis: Modelling of biomass combustion chemistry to investigate gas phase alkali sulfate formation.
- **Tehran South University** *2005 – 2009*
  BS.c in Thermo-fluid Mechanical Engineering Tehran, Iran
  ◦ Thesis: Thermodynamic analysis of Brayton cycle and gas turbine.

Research Experience

- **Alfred Wegener Institute** *09.2021 – 04.2025*
  Doctoral researcher Bremerhaven, Germany
  ◦ Automatic **ice sheet stratigraphy** mapping, using **deep learning**
  ◦ Generation of stratigraphy mapping **benchmark dataset**
  ◦ **Basal ice** segmentation, using generative AI
  ◦ Novel evaluation metrics
  ◦ **Review** of shortcomings of different stratigraphy mapping methods
- **University of Bergen, Informatics department** *11.2024 – 01.2025*
  Visiting researcher Bergen, Norway
  ◦ Machine Learning group, Generative AI
- **Forschungszentrum Jülich** *12.2018 – 10.2020*
  Junior researcher Jülich, Germany
  ◦ Stratospheric ice nucleation modelling using microphysics model MAID
  ◦ Stratospheric dynamics using lagrangian model CLaMS
- **Lappeenranta University of Technology, Thermodynamics Lab** *03.2018 – 09.2018*
  Research assistant Lappeenranta, Finland
  ◦ Numerical modelling of combustion
  ◦ Computational fluid dynamics (CFD)
- **TU Graz** *06.2016 – 11.2016*
  Master Thesis worker Graz, Austria
  ◦ Combustion physics
  ◦ Numerical simulation of combustion kinetics (Python implementation)
- **The Netherlands Organization for applied scientific research (TNO)** *10.2015 – 03.2016*
  Intern researcher Petten, the Netherlands
  ◦ Mathematical modelling of CO_2 adsorption (Matlab implementation)
- **Lappeenranta University of Technology, Thermodynamics Lab** *05.2015 – 09.2015*
  Intern researcher Lappeenranta, Finland
  ◦ Numerical tool for biomass combustion calculations

PUBLICATIONS

C=CONFERENCE PAPER, J=JOURNAL, P=PRE-PRINT, S=IN SUBMISSION, T=THESIS

[P, S] Moqadam, et al. (2024). **Going deeper with deep learning: automatically tracing internal reflection horizons in ice sheets**. DOI, *Journal of Geophysical Research, AGU Publications*

[P, S] Moqadam, H. Eisen, O. (2024). **Review article: Feature tracing in radio-echo sounding products of terrestrial ice sheets and planetary bodies**. DOI, *The Cryosphere, EGU Publication* .

[C] Hameed Moqadam, Thomas Gruber (2017). **Modelling of Biomass Combustion Chemistry to Investigate Gas Phase Alkali Sulphate Formation**. DOI, *Proceedings of the 25th European Biomass Conference and Exhibition*, Session: 2BV.1.59, pp. 702 - 708, ISBN: 978-88-89407-17-2.

GRANTS

- **Funded** *11.2024 – 01.2025*
  Helmholtz Information & Data Science Academy (HIDA) - Norwegian Artificial Intelligence Research Consortium (NORA)
  NORA report

FIELD EXPERIENCE

- **Antarctic Land Expedition** *10.2023 – 01.2024*
  Donning Maud Land, Antarctica
  - Phase-sensitive radar (ApRES) Measurements
  - Stake measurements 800 km (traverse between Neumayer III and Kohnen station, 1124 stakes measures. 411 new stakes mounted.)
  - Snow sampling (isotope measrement)
  - Snow Density measurements
  - Skidoo and snow groomer (Pistenbully) driving
  - Antarctic stations:
    - Kohnen (7 weeks), Neumayer III (3 weeks), Troll (1 week)
- **Crevasse Rescue training (1 week)** *09.2023*
  Pitztal, Austria
  - Cravass rescue
  - Glacier emergency training
- **Glacier expedition and field course (1 week)** *07.2022*
  Vernachtverner, Austria
  - Snow pit digging
  - Snow density measurements
  - Radar measurements (GPR)
- **Research cruise on RV Heincke (North sea, around Helgoland, 4 days)** *04.2022*
  North Sea
  - Echo-sounder, Multibeam
  - CTD, Multinet
  - Gravitycorer, Box corer, Multicorer

CONFERENCE ATTENDANCE

Oral Presentation

- **8th Geomar Data Science Symposium** *06.2023*
  Mapping Extended Internal Stratigraphy in Ice Sheets using Computer Vision Approaches. Kiel, Germany
  Book of Abstracts
- **European Geosciences Union (EGU) general assembly** *05.2023*
  Tracing Extended Internal Stratigraphy in Ice Sheets using Computer Vision Approaches. Vienna, Austria
  Abstract

Session Convener

- **European Geosciences Union (EGU) general assembly** *04.2025*
  Machine Learning for Cryospheric Sciences. Vienna, Austria
  Session Description
- **ICY MARE conference** *09.2023*
  Applications of machine learning in marine sciences. Oldenburg, Germany

Poster Presentation

- **FRISP - Forum for Research into Ice Shelf Processes** *07.2024*
  Going deeper with deep learning, tracing deep internal reflection horizons in ice sheets. Bremerhaven, Germany

- **European Geosciences Union (EGU) general assembly** *04.2024*
  Mapping of deep internal reflection horizons, method modifications and applications. Vienna, Austria
  Abstract
- **The Willi Dansgaard Centenary Symposium, Niels Bohr Institute** *08.2022*
  Automatic Mapping of Internal Stratigraphy in Ice Sheets, using conventional and learning methods. Copenhagen, Denmark
- **StratoClim final meetings and conference** *05.2019*
  Cirrus clouds evolution and origin observed through StratoClim campaign. Potsdam, Germany

Journal Reviews

Reviewer for Environmental Data Science (Cambridge University Press & Assessment)

Skills

- **Programming Languages:** Python, Matlab, Fortran
- **Technical skills:** Linux, Unix, Git, LaTeX, HPC, QGIS, COMSOL, ParaView, Ansys CFX
- **Climate and geospatial data:** NetCDF, ECMWF reanalysis (Era-interim, Era-5)
- **Data Science & Machine Learning:** Segmentation, Classification, Auto-encoders, CNN, GNN, Generative AI, TensorFlow, PyTorch
- **Soft skills:** Excellent communication, Public speaking, Team-worker and sociable, Fast learner
- **Mathematical modelling:** Finite volume, Finite difference, Turbulence models, CFD
- **Field skills:** Skidoo and snow groomer driving
- **Languages:** English (C2), German (B1), French (B1), Persian (Mother tongue)

Professional Memberships

- **European Geoscience Union – EGU** *2019 – present*
- **International Glaciological Society – IGS** *2021 – present*
- **Dokteam member (PhD students representatives at Alfred Wegener Institute)** *2021 – 2022*
  - Attending department and directorate meetings.
  - Organising PhD days 2023 in Potsdam (internal conference for AWI PhD students).
  - Contact person for PhD student queries.
  - Organising social events.
- **Association of Polar Early Career Scientists – APECS** *2021 – present*
- **Scientists for Future (S4F Deutschland)** *2019 – present*

Invited Talks

- University of Bergen, Geoscience department *December 2024*
- University of Bergen, Informatics Department *November 2024*
- University of Tübingen, Glaciology & Geophysics group *March 2023*
- Talk for the winners of German AI national competitions (Bundeswettbewerbe KI, www.bw-ki.de) *April 2023*

Service and Outreach

- Development of Cape Verde digital twin in the frame of MarDATA-WASCAL program collaboration (Mindelo, Cape Verde, March 2024).
- Scientist for Future representative at Research Mile at the Maritime Week in Bremen (Bremen, Germany, September 2023).
- Gave a speech at the Ju-Docs ceremony 2019 at the Jülich research center for the scientists and doctoral researchers of the entire center, ∼500 audience (Jülich, Germany, September 2019).

References

1. **Olaf Eisen**
   Professor of Glaciology
   University of Bremen / Alfred Wegener Institute
   Email: mailto:olaf.eisen@awi.de
   Phone: +49 471 4831-1969
   Relationship: PhD supervisor
2. **Adalbert Wilhelm**
   Professor of Statistics
   Constructor University Bremen
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   Phone: +49 421 200-3402
   Relationship: PhD supervisor

Bergen, Norway, December 3, 2025