MOHAMMAD KHATERI, PH.D. CANDIDATE

University of Eastern Finland (UEF), P.O. Box 1627, FIN-70211 Kuopio, Finland
Phone: +358 44 947 6699 Email: mohammad.khateri@uef.fi
Citizenship: Iranian Permanent Residence: Finland

January 14, 2026

EDUCATION

University of Eastern Finland, Finland *2020–present*
Ph.D. in Medical Computer Vision
Thesis: "Computational Methods for Brain Ultrastructure Analysis: Simulation, Super-Resolution, and Segmentation"; conducting multidisciplinary research in computational neuroscience, integrating computer science, neuroscience, and medical physics.

Harvard Medical School, USA Dec 2024 – Jun 2025
Visiting Scholar
Conducted research and developed AI-driven healthcare methods at Harvard Medical School and Boston Children's Hospital in groups led by Prof. Simon K. Warfield and Prof. P. Ellen Grant, focusing on MRI super-resolution and ultrasound image compounding for fetal brain analysis.

Tarbiat Modares University, Iran *2014–2017*
Master of Science in Electrical Engineering–Communications
Thesis: Multi-sensor image fusion based on spatial-frequency features.

Bu-Ali Sina University, Iran *2009–2013*
Bachelor of Science in Electrical Engineering–Electronics
Thesis: Examining electrical properties of concrete to analyze its physical properties.

RESEARCH PROJECTS

Weakly Supervised Learning for Brain Ultrastructural Segmentation in Electron Microscopy 2024 – present
University of Eastern Finland, Finland

Developing weakly supervised learning frameworks for soma instance segmentation in large-scale 3D electron microscopy images under severe annotation scarcity.

MRI Super-Resolution 2025 – present
Harvard Medical School, USA

Developing deep learning methods for reconstructing high-resolution isotropic MRI from fast multi-view anisotropic acquisitions, addressing clinical constraints on scan time and spanning supervised, self-supervised, and scan-specific learning paradigms.

Computational Imaging for Ultrasound 2025 – 2026
Harvard Medical School, USA

Developed multi-view ultrasound compounding methods for fetal brain imaging to mitigate view-dependent artifacts and limited field of view, implementing and evaluating classical and learning-based strategies with a focus on unsupervised and self-supervised approaches, released as the USFetal Compounding Toolbox.

Image Restoration for Large-Scale Electron Microscopy 2022 – 2024
University of Eastern Finland, Finland

Developed supervised and self-supervised pipelines for in-place super-resolution and isotropic 3D reconstruction of large-scale electron microscopy images from anisotropic acquisitions, along with efficient denoising methods to enhance image quality.

Simulation of Diffusion MRI with Parallel Computing 2020 – 2022
University of Eastern Finland, Finland

Developed biophysically grounded Monte Carlo simulations of diffusion MRI using CUDA-based parallel computing, including simulations of advanced pulse sequences.

Multi-Sensor Image Fusion 2016 – 2019
Tarbiat Modares University, Iran; University of British Columbia, Canada

Developed model-based and learning-based pipelines for fusing MR–PET images and remote-sensing data (PAN/MS/HS), leveraging multi-resolution analysis, compressed sensing, and sparse representations.

Image Quality Assessment 2016 – 2018
Tarbiat Modares University, Iran

Evaluated image sharpness and interpretability using Modulation Transfer Function analysis and task-driven quality metrics in medical and remote-sensing applications.

WORK EXPERIENCE

Tarbiat Modares University & University of British Columbia 2017–2019

Researcher - Conducted research on image processing and multi-sensor data fusion.

Huawei Technologies 2016–2017

RF Engineer — Focused on wireless communications quality assessment.

RESEARCH INTERESTS

Medical Image Processing and Analysis
Computer Vision
Multi-Modal Machine Learning
Computational Imaging

PROGRAMMING AND TECHNICAL SKILLS

Programming Languages: Python, C, C++, CUDA
Software and Libraries: MATLAB, LaTeX, PyTorch, scikit-learn, OpenCV, NumPy, SciPy, Matplotlib, Jupyter
AI & ML Architectures: Transformers (ViT, Swin), GANs, ANNs, CNNs, Vision Foundation Models
Computing & Infrastructure: Docker, Linux, HPC environments, GPU computing (NVIDIA, AMD), Git&GitHub
Medical Imaging, Visualization & AI Tools: ITK-SNAP, 3D Slicer, Amira, MONAI

AWARDS AND HONORS

Best Paper Runner-Up, *EUVIP Workshop* — 2023
Featured Cover Image in *NMR in Biomedicine* - 2022
Oral presentation at ISMRM (acceptance rate 12%) — 2022
Top 1% rank in national entrance exam for M.Sc. — 2014
Outstanding Student Award (1st rank) in B.Sc. in Electrical Engineering— 2013

GRANTS

Doctoral Researcher Position (competitively awarded by UEF, salary-funded) — 2022–2025
Finnish Cultural Foundation Grant (€15,000) — 2025-2026

Finnish Foundation for Technology Promotion Grant (€13,200) — 2025-2026
Saastamoinen Foundation Travel Grant (€12,000)† — 2024-2025
KAUTE Foundation Grant (€5,700)† — 2024-2025
DPMM Travel Grants (€1,000)† — 2023
DPMM Travel Grants (€600) — 2022

†*Awarded to support a six-month research visit to Harvard Medical School and Boston Children's Hospital, 2024-2025.*

SELECTED COURSES, WORKSHOPS, AND CONFERENCES

Deep Neural Networks and Computer Vision, 2022
CUDA C/C++ Programming, 2021
Pattern Recognition, 2021
Workshop on Advanced MRI Methods, Finland, 2022
International Society for Magnetic Resonance in Medicine (ISMRM), London, United Kingdom, 2022
Medical Image Computing Summer School, University College London, United Kingdom, 2022
European Workshop on Visual Information Processing (EUVIP), Gjøvik, Norway, 2023
CITI Program: Human Subjects and Responsible Conduct of Research; HIPAA Privacy and Security Training, Boston Children's Hospital and Harvard Medical School, USA, 2025

REVIEWER FOR ACADEMIC JOURNALS AND CONFERENCES

Journals: IEEE Transactions on Neural Networks and Learning Systems; IEEE Transactions on Image Processing; IEEE Transactions on Medical Imaging; IEEE Journal of Biomedical and Health Informatics; IEEE Journal of Selected Topics in Signal Processing; IEEE Signal Processing Letters; Pattern Recognition; Computers in Biology and Medicine; Engineering Applications of Artificial Intelligence; IET Image Processing Journal; The Journal of Supercomputing.

Conferences: IEEE/CVF Conference on Computer Vision and Pattern Recognition; International Conference on Pattern Recognition

LANGUAGES

English: Proficient
Persian: Native

MEMBERSHIPS

Student member of the Institute of Electrical and Electronics Engineers (IEEE)
Trainee member of the International Society for Magnetic Resonance in Medicine (ISMRM)

PUBLICATIONS

Author of fourteen journal and conference papers, as listed below; the complete list is available on my Google Scholar.

Published Journal Articles

- **Mohammad Khateri**, Morteza Ghahremani, Qi Zeng, Ryne Didier, Alejandra Sierra, Jussi Tohka, P. Ellen Grant, and Davood Karimi, "USFetal: Tools for Fetal Brain Ultrasound Compounding," *IEEE Journal of Biomedical and Health Informatics* (submitted), 2026, GitHub.
- **Mohammad Khateri**, Serge Vasylechko, Morteza Ghahremani, Liam Timms, Deniz Kocanaogullari, Simon K. Warfield, Camilo Jaimes, Davood Karimi, Alejandra Sierra, Jussi Tohka, Sila Kurugol, Onur Afacan. "MRI super-resolution with deep learning: a comprehensive survey," *Proceedings of the IEEE* (submitted), 2025, GitHub.
- **Mohammad Khateri**, Morteza Ghahremani, Alejandra Sierra, and Jussi Tohka. "No-clean-reference image super-resolution: application to electron microscopy," *IEEE Transactions on Computational Imaging*, 2024, GitHub.

- Morteza Ghahremani, **Mohammad Khateri**, Alejandra Sierra, and Jussi Tohka. "Adversarial distortion learning for medical image denoising," *arXiv preprint*, GitHub.
- **Mohammad Khateri**, Marco Reisert, Alejandra Sierra, Jussi Tohka, and Valerij G. Kiselev. "What does FEXI measure?" *NMR in Biomedicine*, 2022; 35(12): e4804. doi:10.1002/nbm.4804.
- **Mohammad Khateri**, Fahim Shabanzade, Fardin Mirzapour, Amirhossein Zaji, and Zheng Liu. "A variational approach for fusion of panchromatic and multispectral images using a new spatial–spectral consistency term," *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 2020; 13: 3421-3436.
- **Mohammad Khateri**, Fahim Shabanzade, and Fardin Mirzapour. "Regularised IHS-based pan-sharpening approach using spectral consistency constraint and total variation," *IET Image Processing*, 2019; 14(1): 94-104.
- Fahim Shabanzade, **Mohammad Khateri**, and Zheng Liu. "MR and PET image fusion using nonparametric Bayesian joint dictionary learning," *IEEE Sensors Letters*, 2019; 3(7): 1-4.

Under Preparation

- **Mohammad Khateri**, Morteza Ghahremani, Alejandra Sierra, and Jussi Tohka. "SomaSeg: Weakly-supervised learning for soma segmentation in electron microscopy" *IEEE Transactions on Biomedical Engineering* (to be submitted by February 2026).
- **Mohammad Khateri**, Deniz Kocanaogullari, Morteza Ghahremani, Alejandra Sierra, and Jussi Tohka, Simon Warfield, and Onur Afacan. "MRI-SR: Supervised and Self-Supervised Learning for Multi-View MRI Super-Resolution," *IEEE Signal Processing Letter* (to be submitted by April 2026).
- Davood Karimi, **Mohammad Khateri**, Bo Li, Simon Warfield, and P. Ellen Grant. "Enhancing Fetal Brain Diffusion MRI by Learning to Remove Synthesized Distortions," *Medical Image Analysis* (to be submitted).

Conference Proceedings

- Morteza Ghahremani, **Mohammad Khateri**, Bailiang Jian, Benedikt Wiestler, Ehsan Adeli, Christian Wachinger. "H-ViT: A Hierarchical Vision Transformer for Deformable Image Registration," *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024. (Highlights)
- **Mohammad Khateri**, Morteza Ghahremani, Alejandra Sierra, and Jussi Tohka. "Self-supervised super-resolution approach for isotropic reconstruction of three-dimensional electron microscopy images from anisotropic acquisition," *11th European Workshop on Visual Information Processing (EUVIP)*, 2023. (Oral presentation, and Best paper runner-up)
- **Mohammad Khateri**, Marco Reisert, Alejandra Sierra, Jussi Tohka, and Valerij G. Kiselev. "What does FEXI measure?" *International Society for Magnetic Resonance in Medicine (ISMRM)*, London, UK, 2022. (Oral presentation)
- **Mohammad Khateri**, Hassan Ghassemian, and Fardin Mirzapour. "A model-based method for pan-sharpening of multi-spectral images using sparse representation," in *2019 IEEE International Conference on Signal and Image Processing Applications (ICSIPA)*, pp. 219-224, IEEE, 2019.
- **Mohammad Khateri** and Hassan Ghassemian. "A self-learning approach for pan-sharpening of multispectral images," in *2017 IEEE International Conference on Signal and Image Processing Applications (ICSIPA)*, pp. 199-204, IEEE, 2017.
- **Mohammad Khateri** and Hassan Ghassemian. "A compressed-sensing-based approach for remote sensing image fusion," in *2016 24th Iranian Conference on Electrical Engineering (ICEE)*, pp. 1809-1814, IEEE, 2016.