SKILLS

- AI Algorithm Design
- Complex Problem Solving
- Critical Thinking
- Project Leading
- Teaching

Education

- PhD, Computer Science, University of Helsinki, Finland, 2021.

Dr. Ehsan Khoramshahi

- Machine-Learning Researcher; AI Programmer;
- Mobile Robots and Mobile Mapping Systems Expert with +15 years of research and development experience;
- Computer-Vision Scientist with Novel State-of-the-Art Multi-camera and Mobile Mapping System Calibration Models.

Work experiences

- CEO and Founder Visionium Oy, Helsinki, Finland (2024).
- Principal AI lecturer, Metropolia University of Applied Sciences, Finnish AI region (FAIR). project Manager from MUAS side. (2023).
- Guest Lecturer, photogrammetry and AI, university of Tehran. (2023).
- Senior Research scientist, Finnish Geospatial Research Institute (FGI), National Land-Survey of Finland (NLS) (2014-2023).
- Research Scientist, University of Helsinki (2012-2014).
- Researcher and Developer Photocore GmbH, Switzerland (2009-2011).

Interests

- Artificial Intelligence (AI) algorithm design specially for robotic applications,
- Computer vision algorithm design,
- Complex optical system development for small robots/mobile mapping systems,
- Photogrammetric data processing, cloud computing,
- Geometric algorithm design and data processing,
- Big Data,
- Scientific activities, teaching, Publications.

Degrees

- 26.01.2021, PhD, Computer Science, University of Helsinki, Finland; (verification: registrar@helsinki.fi)
- 21.08.2008, Master of Engineering, Civil-Engineering-Surveying-Geodesy, Khaje-Nasir-Toosi University of Technology, Iran;
- *22.07.2005, Bachelor of Engineering, Civil-Engineering-Surveying, Tehran University, Iran.*

Research supervision and leadership experience

- In Finnish AI region (FAIR) project, I was the project manager from the Metropolia UAS side. My responsibility was to organize AI" needs analysis" for SMEs (small-medium sized enterprises) to offer suitable FAIR AI services.
- In FAIR, I supervised several AI projects where groups of students were mentored to solve real problems of SMEs. I supervised and mentored students in 6 industrial projects.
- I supervised and mentor a PhD student from University of Helsinki for a significant part of this Doctoral dissertation through a joint scientific activity that led to a journal publication, 2022-2023.

Funding acquisition

- Successfully contributing in several funding acquisition and EU projects in FGI. Participating in fund grabbing, project planning and execution, reporting, etc.
- Acquired start-up grant from Business Helsinki for Visionium Oy in 2024. The Visionium Oy is a software company specialized in Photogrammetric software calibration suites, robotics, and mobile mapping systems.
- Applying Research Council of Finland in its 2023 call with the project title "A Novel Scheme for Designing, Calibrating, and Functioning a Modular Mobile Mapping System". Despite some basic flaws in the project budget, the content was marked by aka as "Excellent" and ranked 6th in its category.

Teaching merits

- Teaching "Digital Image Processing" to master students in University of KNTU, Tehran, Iran, semester 1 2024, Role: "non-funded guest lecturer", teaching language Persian.
- Teaching "Computational Photogrammetry" to bachelor students in University of Tehran, semesters 1 and 2, 2023-2024 , Role: "non-funded guest lecturer", teaching language Persian.
- Teaching "The production line of Photogrammetry" to bachelor students in University of Tehran, semesters 1 and 2, 2023-2024 , Role: "non-funded guest lecturer", teaching language Persian.
- Teaching "Deep Neural Networks" to master students of Remote-Sensing in University of Tehran, 2022, Role: "non-funded part-time lecturer" teaching language Persian.
- Teaching "geodesy" to bachelor students, Iran, 2007, role: teacher, teaching language Persian.
- Teaching "Image processing" to Master students in University of Helsinki, 2012. Role: teaching assistant, teaching language English.

Other key academic merits, such as

- Guest editor of the special issue "Novel Applications of UAV Imagery for Forest Science" in MDPI remote-sensing journal, 2022-2024.
- Guest editor of the special issue "Remote Sensing for Spatial Information Extraction and Process" in MDPI remote-sensing journal, 2023-2024.
- Reviewing of more than 40 papers in remote-sensing, photogrammetry, forestry, computer science, and mathematics.

Scientific and societal impact

- Actively promoting the usage of open science in research projects of FAIR.
- Helping SMEs in Finland and Europe to better use AI technologies through FAIR project.
- Creating Photogrammetry.fi blog to promote open-science.

Publications:

- Mohammad Imangholiloo, Ville Luoma, Markus Holopainen, Mikko Vastaranta, Antti Mäkeläinen, Niko Koivumäki, Eija Honkavaara, Ehsan Khoramshahi, A New Approach for Feeding Multispectral Imagery into Convolutional Neural Networks Improved Classification of Seedlings, 2023, Remote-Sensing, journal article. My roles: supervising and advising the student, helping to design the AI method, editing the article.
- Ehsan Khoramshahi, Roope Näsi, Stefan Rua, Raquel A Oliveira, Axel Päivänsalo, Oiva Niemeläinen, Markku Niskanen, Eija Honkavaara, A Novel Deep Multi-Image Object Detection Approach for Detecting Alien Barleys in Oat Fields Using RGB UAV Images, 2023, Remote-Sensing, journal article. My roles: Experimental design, visualization, original writing, editing.
- Jianxin Jia, Haibin Sun, Changhui Jiang, Kirsi Karila, Mika Karjalainen, Eero Ahokas, Ehsan Khoramshahi, Peilun Hu, Chen Chen, Tianru Xue, Tinghuai Wang, Yuwei Chen, Juha Hyyppä, Review on active and passive remote sensing techniques for road extraction, 2021, Remote-Sensing, journal article. My role: editor.
- Ehsan Khoramshahi, Raquel A Oliveira, Niko Koivumäki, Eija Honkavaara, An image-based real-time georeferencing scheme for a UAV based on a new angular parametrization, 2020, Remote-Sensing, journal article. My roles: Experimental design, visualization, original writing, editing.
- Somayeh Nezami, Ehsan Khoramshahi, Olli Nevalainen, Ilkka Pölönen, Eija Honkavaara, Tree species classification of drone hyperspectral and RGB imagery with deep learning convolutional neural networks, 2020, Remote-Sensing, journal article. My roles: Experimental design, visualization, original writing, editing.
- Ehsan Khoramshahi, Mariana Batista Campos, Antonio Maria Garcia Tommaselli, Niko Vilijanen, Teemu Mielonen, Harri Kaartinen, Antero Kukko, Eija Honkavaara, Accurate calibration scheme for a multi-camera mobile mapping system, 2019, Remote-Sensing, journal article. My roles: Experimental design, visualization, original writing, editing.
- Ehsan Khoramshahi, Eija Hokavaara, Modelling and automated calibration of a general multi-projective camera, 2018, Photogrammetric Record, journal article. My roles: Experimental design, visualization, original writing, editing.
- Jian Tang, Yuwei Chen, Antero Kukko, Harri Kaartinen, Anttoni Jaakkola, Ehsan Khoramshahi, Teemu Hakala, Juha Hyyppä, Markus Holopainen, Hannu Hyyppä, SLAM-aided stem mapping for forest inventory with small-footprint mobile LiDAR, 2015, Forests, journal article. My roles: Experimental design, editing.
- Ehsan Khoramshahi, Juha Hietaoja, Anna Valros, Jinhyeon Yun, Matti Pastell, Image quality assessment and outliers filtering in an image-based animal supervision system, 2015, International Journal of Agricultural and Environmental Information Systems (IJAEIS), journal article. My roles: Experimental design, visualization, original writing, editing.

Other research outputs:

- Ehsan Khoramshahi, Multi-Projective Camera-Calibration, Modeling, and Integration in Mobile-Mapping Systems, 2020, University of Helsinki, Doctoral Dessertation.
- Ehsan Khoramshahi, Computational Photogrammetry, 2024, Text Book.