Personal details and date of CV

- Maboudi Afkham
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- Date: 08.01.2025

Degrees

- 19.10.2018, Ph.D. Computational Mathematics and Simulation Science, École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland. Contact Phone: +41 (0)21 693 11 11
- 15.08.2014 M.Sc. Scientific Computing, Royal Institute of Technology (KTH), Stockholm, Sweden.
- 15.07.2012 B.Sc. Theoretical Mathematics, Sharif University of Technology (SUT), Tehran, Iran.

Current employment

- 15.10.2024 to present: Assistant Professor (tenure track), University of Oulu, Finland. Job de- scription: Performing research in new uncertainty quantification methods for inverse problems, machine learning methods for uncertainty quantification, and teaching applied mathematics (full-time). Stage IV of academic research career.

Previous work experience

- 01.09.2024 to 15.10.2024: Postdoctoral Researcher, University of Helsinki, Finland. Job description: Performing research and teaching in applied mathematics (full-time). Stage III of academic research career.
- 01.09.2020 to 31.08.2024: Postdoctoral Researcher, Technical University of Denmark (DTU), Denmark.
- 01.11.2018 to 30.07.2020: Postdoctoral Researcher, Stuttgart University, Germany.
- 01.09.2017 to 28.02.2018: Exchange Graduate Student, Massachusetts Institute of Technology (MIT).

Research funding and grants

- Finnish Ministry of Education and Culture (€ 175000), 2024-2028 partner PI, Doctoral Educa- tion Pilot for Mathematics of Sensing, Imaging and Modelling. Awarded together with the ten- ure-track position at University of Oulu.
- The Swiss National Science Foundation (SNSF) Early PostDoc.Mobility grant (CHF 70150), 2019. The main and only applicant. Principal Investigator: Prof. Andrea Barth.
- The Swiss National Science Foundation (SNSF) Doc.Mobility grant (USD 24000), 2017. The main and only applicant. Principal Investigator: Prof. Karen Willcox.

Research output

Publications:

- 12 published scientific papers in top applied mathematics journals, e.g., SIAM SISC, SIAM UQ, Inverse Problems, and JMIV. 1 article under review process.
- Co-developer of the open-source Python software, “CUQIpy”, performing advanced uncertainty quantification for inverse problems.

Research supervision and leadership experience

Total Number of appointed supervisions: 1 involvement of co-supervision of postdoc researcher, 5 involvements in co-supervision of Ph.D. students, 2 co- supervision of M.Sc. students, 1 co-supervision of B.Sc. student.

Current Research Leaderships

- Research Leader in the project: exploring ocean seafloor with acoustic waves. Other participants: Prof. Ana Carpio, Prof. Per Christian Hansen. Description: distributing theoretical and computational tasks to construct a software and a research paper.
- Research Leader in the project: photo-acoustic tomography using the randomize-then-optimize method. Other participants: Prof. Tanja Tarvainen, Dr. Amal Alghami. Description: distributing theoretical and computational tasks to construct a software and a research paper.
- Research Leader in the project: uncertainty quantification for inverse problems with diffusion models. Other participants: Associate Prof. Matthias Chung, Associate Prof. Julianne Chung. Description: distributing theoretical and computational tasks to construct a software and a research paper.
- Research Leader in the project: inhomogeneous priors for inverse problems. Other participants: Prof. Lassi Roininen, Dr. Tomas Soto. Description: Theoretical investigation in defining well-posed probability distributions that capture in-homogeneities in inverse problems through brain-storming and problem solving.

Teaching merits

Pedagogical Training received:

- Teaching Lab: introduction to Teaching and Learning in Engineering Education, DTU Course development:
- Developing course material, assignments, group activities, and examination materials for the PhD course” Introduction to Uncertainty Quantification for Bayesian Inverse Problems”, DTU (2024).
- Developing **online** course materials, remote-activities, online break-out room activities and online course evaluation methods for the course” Introduction to Uncertainty Quantification for Bayesian Inverse Problems”, DTU (2021). The online format was due to the COVID-19 pandemic.
- Developing homework materials, holding exercise sessions, leading teams of up to 18 teacher assistants in the courses “Analysis I” and “Analysis II” at EPFL for 6 semesters.

Awards and honors

- The Stockholm Mathematics Center (SMC) award for excellent master thesis.
- KTH scholarship and tuition fee waiver for M.Sc. program.

Other key academic merits, such as

- Examiner for master thesis presentation of Kenneth Scheel at DTU, 2023.
- Referee for 4 scientific articles in, e.g., “SIAM journal on Scientific Computing”, “SIAM journal on Imaging Sciences”, and “SIAM journal on Control and Optimization”, Springer Nature” Advances in computational mathematics”, and “Journal of Computational Physics”.
- Referee for 3 conference proceedings and special issue including “journal Applied Mathematics for Modern Challenges”.
- Organizer of the mini-symposium in 2 parts in SIAM conference on Imaging Sciences with title “Goal-Oriented Uncertainty Quantification in Imaging Sciences” (Atlanta-2024).
- Organizer of the mini-symposium in 3 parts in SIAM conference on Imaging Sciences with title “Uncertainty quantification for inverse problems in imaging” (online-2022).

Scientific and societal impact

- **Online Community Engagement**: I Actively promote science and technological advances on social media, e.g., LinkedIn.
- **Internation Collaborative Projects**: I am actively finding collaborative research with new people, and research institutes. Currently I am collaborating with Emory College, Cambridge University, Universidad Complutense de Madrid, University of Eastern Finland. In the past I have successfully collaborated with EPFL, Stuttgart University, MIT, and Virginia Tech.
- **Innovative Use of Technology for Education**: Leveraging technology, I have developed online courses, and interactive teaching methods and coursework to create an effective teaching/learning experience.

Other

- Passionate Rock Climber
- Advocate for reducing carbon foot print.
- Member of the Italian Alpine Club (CAI)