

Babak Maboudi Afkham

Computational Mathematician and Simulation Scientist

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[in/maboudi](#)

1. Personal Details and The Date of The CV

- Date: 28/08/2024
- Surname: Maboudi Afkham
- First Name: Babak
- ORCID ID: 0000-0003-3203-8874
- Scopus Author Identifier: 57200161302
- Google Scholar: X-DzpA4AAAAJ

2. Degrees

Ph.D. in Computational Mathematics and Simulation Science **Lausanne, Switzerland** 09/2014 - 10/2018

- Doctorate in Sciences
- École Polytechnique Fédérale de Lausanne (EPFL)
- Tel: +41 21 693 11 11
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M.Sc. in Scientific Computing **Stockholm, Sweden** 08/2012 - 8/2014

- Master in Science
- KTH Royal Institute of Technology (KTH)
- Tel: +46 8 790 60 00
- email: info@kth.se

B.Sc. in Theoretical Mathematics **Tehran, Iran** 09/2007 - 7/2012

- Bachelor in Science
- Sharif University of Technology (SUT)
- Tel: +98 21 6616-4780
- email: ia@sharif.edu

3. Other Education and Expertise

Exchange Graduate Student **Boston, USA** 09/2017 - 3/2018

- Department of Aeronautics and Astronautics
- Massachusetts Institute of Technology (MIT)

4. Language Skills

- **Persian/Farsi:** native language
- **English:** full professional fluency
- **French:** B1 Certificate 2015
- **Italian:** limited professional fluency

5. Current Employment

Assistant Professor (Tenure Track) **Oulu, Finland** 10/2024 - present

- University of Oulu
- Research keywords: Inverse Problems, Uncertainty Quantification, Bayesian Statistics, Machine Learning, Mathematical Modeling, Partial Differential Equations

Postdoctoral Researcher

Helsinki, Finland 9/2024 - 10/2024

- Principal Investigator: Tuomo Valkonen
- University of Helsinki
- Research keywords: Inverse Problems, Optimization, Partial Differential Equations

6. Previous Work Experience

Postdoctoral Researcher

Copenhagen, Denmark 09/2020 - 09/2024

- Technical University of Denmark (DTU)
- Principal Investigator: Prof. Per Christian Hansen
- Stage of The Academic Research Career: Stage 3 (estimated)
- Research keywords: Inverse Problems, Uncertainty Quantification, Bayesian Statistics, Machine Learning, Mathematical Modeling, Partial Differential Equations

Postdoctoral Researcher

Stuttgart, Germany 10/2018 - 08/2020

- Stuttgart University
- Principal Investigator: Associate Prof. Andrea Barth
- Research keywords: Inverse Problems, Uncertainty Quantification, Bayesian Statistics, Machine Learning, Mathematical Modeling, Partial Differential Equations

7. Research Fundings and Grants

- **Finnish Ministry of Education and Culture** : (€ 175000), 2024-2028 partner PI, Doctoral Education Pilot for Mathematics of Sensing, Imaging and Modelling
- **The Swiss National Science Foundation (SNSF) Early PostDoc.Mobility grant** : 18 months of postdoc studies (CHF 70150), 2019. PI: Associate Prof. Andrea Barth
- **The Swiss National Science Foundation (SNSF) Doc.Mobility grant** : 6 months (USD 24000) of exchange graduate studies abroad, 2018. PI: Prof. Karen Willcox

8. Research Supervision and Leadership Experiences

Total Number of appointed supervisions: 3 involvement in co-supervision of Ph.D. students, 2 co-supervision of M.Sc. students, 1 co-supervision of B.Sc. student.

List of supervisees

- Lara Baalbaki, Ph.D. (DTU, 2023-present), other supervisors: Prof. Mirza Karamahmedovic, Prof. Faouzi Tariki
- Andreas Horst, Ph.D. (DTU, 2022-present), other supervisors: Prof. Yiqiu Dong, Prof. Jakob Lemvig
- Aksel Kaastrup Rasmussen, Ph.D. (DTU, 2020-2023), other supervisor: Prof. Kim Knudsen
- Kenneth Scheel, M.Sc. (DTU, 2022-2023), other supervisor: Prof. Kim Knudsen
- Oliver Konig, B.Sc. (University of Stuttgart, 2020-2021), other supervisor: Prof. Andrea Barth
- Nicolò Ripamonti, B.Sc. (EPFL, 2017-2018), other supervisor: Prof. Jan S. Hesthaven

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, Dr. Jakob Sauer Jørgensen. 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.

9. Teaching Merits

Pedagogical Training

10/2023

- 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” .
- 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” . The online format was due to the COVID-19 pandemic.
- Developing homework materials, holding exercise sessions, leading teams of upto 18 teacher assistants in the courses “Analysis I” and “Analysis II” at EPFL for 6 semesters.

Teaching Experiences

- Lecturer in the Ph.D. course “Introduction to Uncertainty Quantification for Bayesian Inverse Problems” at (DTU-2024)
- Lecturer in the Ph.D. course “Introduction to Uncertainty Quantification for Bayesian Inverse Problems” (DTU-2022)
- 3 times Instructor for the Ph.D. course “Advanced topics on Bayesian inference in infinite dimensions” (2021-2023)
- Principal Teacher assistant for Analysis I and Analysis II (EPFL) - 6 semesters (2014-2018)
- Teacher assistant for under graduate mathematics (University of Stuttgart) - 1 semester (2018)

10. Awards and Honours

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

11. Other Key Academic Merits

- 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” .
- Referee for 3 conference proceedings and special issue including “journal Applied Mathematics for Modern Challenges” .
- Organiser of the mini-symposium in 2 parts in SIAM conference on Imaging Sciences with title “Goal-Oriented Uncertainty Quantification in Imaging Sciences” (Atlanta-2024).
- Organiser of the mini-symposium in 3 parts in SIAM conference on Imaging Sciences with title “Uncertainty quantification for inverse problems in imaging” (online-ee2022).

12. 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. 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.

13. Other Merits

- Rock Climber.
- Member of the Italian Alpine Club (CAI).