

Arman Asgharpour Golroudbari

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RESEARCH INTEREST

Machine Learning Navigation Deep Koopman Operator; Deep Learning based State Estimation and Sensor Fusion
Learning-based SLAM for Planetary Rovers

EDUCATION

M.Sc. Space Engineering, University of Tehran, Tehran, Iran, (*Ranked 1st among Iranian Universities*) **Sep. 2019 – Sep. 2022**
• Thesis: Design and Simulation of Attitude and Heading Estimation Algorithm GPA 4.0/4.0

MBA, Academic Center for Education, Culture and Research, Tehran, Iran **Apr. 2019 – Apr. 2020**
• Project: Utilizing AI for personalized medicine and diagnosis GPA 4.0/4.0
• **Key Courses:** Project Management, Technology Strategy Management, Entrepreneurship Finance, Problem Solving

B. Eng. Aircraft Avionics Technology, University of Applied Science and Technology, Tehran, Iran **Sep. 2016 – Jun. 2019**
• **Key Courses:** C, C++, Electronic I, II, III GPA 3.8/4.0

Associate, Avionics, Civil Aviation Technology College, Tehran, Iran **Jan. 2013 – Sep. 2016**
• **Key Courses:** C++, Aircraft Computer, Telecommunications, Aerodynamics, Navigation Systems, Instrumentation

PUBLICATIONS

1. **A. Asgharpour**, M. H. Sabour, (2023), "End-to-End Deep Learning Framework for Real Time Inertial Attitude Estimation using 6DoF IMU", *Measurement*, DOI: 10.1016/j.measurement.2023.113105.
2. **A. Asgharpour**, M. H. Sabour, (2023), "Recent Advancements in Deep Learning Applications and Methods for Autonomous Navigation: A Comprehensive Review", *Expert Systems with Applications*, arxiv.org/abs/2302.11089 Ready to Submit.
3. **A. Asgharpour**, M. H. Sabour, (2023), "6-Axis Deep Neural Network Inertial Odometry", *Sensors*, *Work in Progress*.

SKILLS

Programming ROS, Python (*PyTorch*, *TensorFlow*, *Keras*), MATLAB, LaTeX
CAD-CAM SolidWorks, Inventor, Proteus, Altium Designer
AI Deep Learning (*LSTM*, *CNN*, *TCN*), PBT Hyperparameter Optimization, Fuzzy Inference System
Language English (*Fluent*), Persian (*Native*)

RESEARCH EXPERIENCE

Participant

- **Oxford Machine Learning Summer School**, University of Oxford **May. 2023 – Present**
 - Organized by AI for Global Goals, CIFAR, and the University of Oxford's Deep Medicine Program
 - Selected among 2000+ applicants from 106+ countries
- **Oxford Machine Learning Summer School**, University of Oxford **Jun. 2022 – Aug. 2022**
 - Covered topics including the mathematics of machine learning, neural networks, and probabilistic ML
 - Gained hands-on experience with state-of-the-art machine learning tools and techniques

Researcher

- **Visual odometry using deep learning techniques**, University of Tehran **Apr. 2023, Present**
 - Developed RCNN-based learning framework and trained and tested via KITTI dataset
- **Inertial odometry end-to-end learning framework**, University of Tehran **Sep. 2022, Present**
 - Used Ray and Sherpa for Hyperparameter Optimization (PBT, Grid & Random Search) in Python (Keras & PyTorch)
 - Trained and tested via OxIOD, RONIN, and RIDI
- **Deep learning based inertial attitude estimation**, University of Tehran **Sep. 2020, Sep 2022**
 - Enhanced attitude estimation accuracy by 40% through Deep Learning techniques
 - Validated using conventional attitude estimation methods (KF Family, QUEST, FQA, CF).
- **CanSat Competition**, Univeristy of Tehran **Sep. 2019, Mar. 2020**
 - Improved computer vision accuracy by implementing an optimized algorithm using Raspberry Pi for faster pattern detection
 - Optimized navigation and state estimation using sensor fusion techniques from the KF family

Research Assistant

- **Fuzzy Logic Lab**, University of Tehran Nov. 2019 , Present
 - Optimized IMU-based attitude estimation by developing Fuzzy tuned complementary filters
- **Space Lab**, University of Tehran Sep. 2019 , Sep. 2022
 - Developed and executed test plans for attitude dynamics and control algorithms for satellite missions using LPC1788
 - Improved test bed control accuracy by implementing a custom control algorithm in LabView
- **Avionics Lab**, Aviation Industry Training Center Oct. 2018 , Sep. 2020
 - Mentored undergraduate students to improve their research skills, resulting in successful completion of the research project
 - Designed and assembled PCBs for fire extinguisher and Flight Management System (FMS) simulator

REVIEWING EXPERIENCE

Referee of Research Council

- **Students' Scientific Research Center** Apr. 2019 , Present
 - Analyzed and evaluated research proposals to determine if they are appropriate for funding

Conferences

- **International Federation of Automatic Control (IFAC) World Congress 2023**, Yokohama, Japan , 1 Paper

Journals , List: webofscience.com/wos/author/record/IAN-3152-2023 

- **IEEE Transactions on Instrumentation & Measurement** , 6 Papers
- **The Aeronautical Journal** , 3 Papers
- **Aerospace Science and Technology** , 3 Papers

TEACHING EXPERIENCE

Teaching Assistant University of Tehran Fall 2022

- Fuzzy Logic Course at Graduate Level (M.Sc. and Ph.D. Students) – Instructor: Dr. M.H. Sabour
 - Developed students' practical skills in programming by designing and supervising projects utilized MATLAB Fuzzy logic toolbox

Instructor Aviation Industry Training Center Sep. 2019 , Sep. 2021

- Taught **11 courses** covering electronics, navigation, and aviation to undergraduate students

Thesis Supervisor Aviation Industry Training Center Sep. 2019 , Sep. 2021

- Provided guidance and assessment for a cohort of **five undergraduate theses**.

WORK EXPERIENCE

Mentor Space Generation Advisory Council Nov. 2020 , Present

- Provided guidance, personalized advice, and support to mentees in SGAC Mentoring Program

Internship -Aircraft Avionics, IranAir, Theran, Iran Sep. 2018 – Nov. 2018

- Checked the aircraft's engine and avionics instruments using Airbus A-320 Aircraft Maintenance Manual (AMM)

Internship -Aircraft Avionics, Civil Aviation Technology College, Theran, Iran Sep. 2015 – Jun. 2016

- Overhauled Aero Commander 690 using AMM

CERTIFICATES

AI for Global Goals, Oxford Machine Learning Summer School Jun. 2022 – Aug. 2022

USERN 1. Submission & Peer Reviewing, 2. Data Analysis in SPSS, 3. Systematic Review, 4. Scientific Writing, 5. Meta-analysis

University of Toronto (Coursera) State Estimation and Localization for Self-Driving Cars

National Society of Professional Engineers Bridging the Gap to Leadership

MathWorks MATLAB Onramp

AWARDS & HONORS

USERN Miniature Talk, Competition Appreciated Presenter 2021

National University Entrance Exam Ranked top 10% in M.Sc. Aerospace Engineering 2019

University of Tehran, Dept. Aerospace Ranked 1st in class 2019

Iran Martial Arts Federation Black Belt Dan II 2015

Iran Martial Arts Federation National Competitions

- **Gold Medalist** (2011, 2012, 2018, 2019), **Silver Medalist** (2015), **Bronze Medalist** (2016, 2019)