Arman Asgharpoor Golroudbari

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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

Professional Development

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**
- Attended a 2-week intensive program on machine learning and deep learning
  - Studied topics such as the mathematics of machine learning, neural networks, and probabilistic ML
  - Gained hands-on experience with state-of-the-art machine learning tools and techniques

Publications

1. **A. Asgharpoor**, M. H. Sabour, (2023), "End-to-End Deep Learning Framework for Real Time Inertial Attitude Estimation using 6DoF IMU", Measurement, *arxiv.org/abs/2302.06037, Under Review*.
2. **A. Asgharpoor**, 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 Work in Progress*.
3. **A. Asgharpoor**, M. H. Sabour, (2023), "6-Axis Deep Neural Network Inertial Odometry", Sensors, *Work in Progress*.

Skills

Programming	ROS, Python (*Matplotlib, NumPy, Pandas, 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

Researcher
- **Visual odometry using deep learning techniques**, University of Tehran **Apr. 2023 - Present**
  - Developed CNN-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

- **IEEE Transactions on Instrumentation & Measurement** - 4 Papers
- **The Aeronautical Journal** - 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
  - Monitored student progress and provided personalized feedback to ensure their academic success and overall growth

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

- Advised and evaluated undergraduate students on their thesis activities. Thesis titles:
  - Design and Implementation of A 3 Axis CNC Machine (Spring 2021 - Fall 2021)
  - Design and Implementation of Pulse Circuits Training Board (Fall 2020 - Fall 2021)
  - Design, Simulate and Build an Aircraft Fire Extinguishing System (Spring 2020 - Fall 2020)
  - Design and Implementation of Retractable Landing Gear (Fall 2019 - Spring 2020)
  - Design and Implementation of A CNC Hot Wire (Fall 2019 - Spring 2020)

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

Martial Arts Instructor Iran Martial Arts Federation **Mar. 2016 – Present**

- Improved communication skills by teaching students from various backgrounds

Leadership Experience

Executive Member

- Universal Scientific Education & Research Network (USERN) Jan. 2021 – Jan 2022
  - USERN Health & Art, 7th International Festival of Paintings for Pediatric Patients
  - 6th International USERN Congress & Prize Awarding Festival
- Tehran University of Medical Sciences Jan. 2014 – May. 2023
  - 24th Iranian Conference on Health Professions Education
  - Inter-professional collaboration in the Covid-19 Era: Pros and Cons
  - 4th Student Education Development Festival
  - 20th, 21st, and 23rd Conference of Annual General Meeting

- World Astronomy Week, Tehran, Iran — Mar. 2017, May. 2022, and Apr. 2023
- Civil Aviation Technology College — Jan. 2012 – Sep. 2015
  - WaterRocket Competition
  - Road & Urban Development & The Related Industries Exhibition
  - 3rd, 4th, and 5th International Aviation & Space Industries Exhibition of Iran

Certificates

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

DeepLearning.AI (Coursera) Neural Networks and Deep Learning

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)

References

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