Arman Asgharpoor Golroudbari

+98 919 609 7597 | [A.Asgharpoor@ut.ac.ir](mailto:A.Asgharpoor@ut.ac.ir%20) | [ArmanAsq.github.io](http://www.armanasq.github.io/)

[](https://linkedin.com/in/asgharpoor)[](https://www.github.com/Armanasq)[](https://researchgate.net/profile/Arman_Asgharpoor)

# Research Interest

**Machine Learning**: Using AI in **State Estimation** and **Sensor Fusion**

**Computer Vision**: **Vision-Based Autonomous Robot Navigation**

**Navigation**: **Spacecraft Navigation**, Machine Learning, and Computer Vision Approach

# Education

# **University of Tehran** — M.Sc. Space Engineering *Sep. 2019 – Sep. 2022*

* **School Ranking**: 1st in Iranian Universities ([U.S, News](https://www.usnews.com/education/best-global-universities/iran)) *GPA:4.0/4.0*
* **Oxford** Machine Learning Summer School (**OxML 2022**)
* **Thesis:** AI Application in Inertial Navigation
* Sensor fusion algorithms were combined with Deep Learning to improve inertial attitude estimation accuracy
* Ray and Sherpa were used for Hyperparameter Optimization (PBT, Grid & Random Search) in Python (Keras & Pytorch)
  + *End-to-End ANN Frameworks were developed for Inertial Odometry (6DoF & 9DoF)*
  + *End-to-End ANN Frameworks were developed for Attitude Estimation (2DoF & 3DoF)*

**Academic Center for Education, Culture and Research** — Healthcare MBA *Apr. 2019 – Apr. 2020*

* **Projects:**  *GPA:4.0/4.0*
  + *Elderly tourism*
  + *Application of AI in personalized medicine*

**Aviation Industry Training Center**— B. Eng. Avionics *Sep. 2016* *– Jun. 2019*

*GPA:3.8/4.0*

**Civil Aviation Technology College** — A.E.T Avionics *Jan. 2013 – Sep. 2016*

# Research Experience

**Summer Project,** *University College London Jul.2022 – Present*

Use **Generative Adversarial Imitation Learning** and **Reinforcement Learning**

* Created path planning of a ground robot via Python in the ROS environment.

**Former of Fuzzy Logic Lab**  *Nov. 2020*

Universal Scientific Education & Research Network Interest Group

* Aimed to do research on Multi-Criteria Decision Making

**ShadX Team Leader,** *AIAA Aircraft Design Competition**Aug. 2020*

* As a Graduate Team Aircraft Design, designed a modern regional jet family

**Referee of Research Council,** *Students’ Scientific Research Center* *Apr. 2019 – Present*

* Evaluated research proposals

**CNC Milling Machine Design and Fabrication,** *Aviation Industry Training Center**Jul. 2019 – Jan. 2020*

* Used embedded systems to control CNC
* Used SolidWorks and Inventor to design the structure

**CanSat Competition Design and Fabrication,** *University of Tehran**Sep. 2019 – Mar. 2020*

* Used Raspberry Pi for Computer Vision and Pattern Detection
* Sensor Fusion implemented for Navigation and State Estimation (KF Family)

**Wireless Power Transmission (WPT) for Medical Purposes** *Sep. 2018 – Jul. 2019*

Circuit Designer and Analyzer

* Used ANSYS, ADS, CST, and Altium Designer to design and analyze the circuit

# Publications

1. **A. Asgharpoor**, M. H. Sabour, **A Receding Horizon Iterative Learning (RHILC) Approach to Formation Control of Multi-Agent Non-Holonomic System**, *Aeronautical Journal*, Under Review
2. **A. Asgharpoor** and M. H. Sabour, **End-to-End Deep Learning for State Estimation: Attitude and Heading Estimation Approach**, *Sensors,* Drafting
3. **A. Asgharpoor** and M. H. Sabour, **Deep Neural Network based Inertial Attitude Estimation using Low-Cost IMU**, *IEEE Transactions on Mobile Computing,* Drafting
4. **A. Asgharpoor** and M. H. Sabour, **6-Axis Deep Neural Network Inertial Odometry,** *Expert Systems with Applications,* Drafting
5. **A. Asgharpoor** and M. H. Sabour, “**Deep Learning based 9-DoF Inertial Odometry for Autonomous Aerial Robots,**” *Drones,* Drafting
6. **Asgharpoor** and M. H. Sabour, **Neural Network-Based Estimation: A Review**, *Neural Computing and Applications,* Drafting

# Skills

**Language** English (*Fluent*), Persian (*Native*)

**Programming** Python (*Matplotlib, NumPy, Pandas, TensorFlow, Keras*), MATLAB, Simulink, Arduino, C++, LaTeX

**CAD-CAM** CATIA, SolidWorks, Inventor, Proteus, Altium Designer, AutoCAD

**CAE** CST, ADS, ANSYS Workbench, Abaqus, COMSOL

**AI** Fuzzy Inference System, Deep Learning (*LSTM, CNN, TCN, etc.*), PBT Hyperparameter Optimization

# Internships

**IranAir,** *Aircraft**Avionics**Sep. 2018 – Nov. 2018*

Used ATR-72 and Airbus A-320 Aircraft Maintenance Manual (AMM) and Aircraft Illustrated Parts Catalog (IPC) for checking the aircraft’s Engine and Avionics Instruments

**Civil Aviation Technology College,** *Avionics Sep. 2015 – Jun. 2016*

Used AMM to overhaul Aero Commander 690

# Lab Experience

**Space Lab,** *University of Tehran* *Sep. 2019 – Sep. 2022*

* Used 3-DoF experimental test bed for integrated attitude dynamics and control
* Used LabView and ARM development boards

**Fuzzy Logic Lab,** *University of Tehran*, and *USERN*  *Nov. 2019 – Present*

Done research on Fuzzy Inference Systems based projects, such as Fuzzy tuned complementary filters for IMU-based attitude estimation. *Advisor:* *Dr. M. H. Sabour*

*Websites*

* + **[*University of Tehran Fuzzy Logic Lab*](https://fuzzylogic.ut.ac.ir/en/page/7122/arman-asgharpoor)
  + **[*USERN Fuzzy Logic Lab Interest Group*](https://usern.tums.ac.ir/Group/Info/FLLIG)
  + **[*ResearchGate*](https://www.researchgate.net/lab/Fuzzy-Lab-Mohammad-H-Sabour)

**Avionics Lab,** *Aviation Industry Training Center* *Sep. 2018 – Sep. 2020*

Worked with Aircraft Instrument Panels and different flight instruments

* Altimeter, Attitude, Airspeed, Vertical Speed, and Heading Indicator

**Electronics Lab,** *Aviation Industry Training Center* *Sep. 2018 – Sep. 2020*

* Designed and assembled PCBs: *Fire extinguisher, Flight Management System (FMS) simulator and etc.*
* Used various measuring tools: *Function Generator, Oscilloscope, LCR meter, etc.*

**Aircraft Instruments Lab,** *Civil Aviation Technology College* *Oct. 2015 – Aug. 2016*

* Lab redesigned, and inventory management was done to improve student performance
* Repaired different flight instruments

# Teaching Experience

**Instructor – Lecturer**, *Aviation Industry Training Center*

A total of 11 courses related to *electronics*, *navigation,* and *aviation* were taught

**Internship Tutor**

* B.Eng., Avionics Technology *Fall 2019 – Fall 2020*
* B.Eng., Aircraft Maintenance *Fall 2019 – Fall 2020*
* A.E.T., Avionics Technology *Fall 2018 – Fall 2020*
* A.E.T., Aircraft Maintenance *Fall 2018 – Fall 2020*

**Lab Tutor**

* + Electronics I *Fall 2018 – Fall 2020*
  + Electronics II *Fall 2018 – Fall 2020*
  + Electronics III *Fall 2018 – Fall 2020*
  + Electronic Circuits I *Fall 2018 – Fall 2020*
  + Electronic Circuits II *Fall 2018 – Fall 2020*
  + Microprocessors *Fall 2018 – Fall 2020*
  + Aircraft Instruments *Fall 2018 – Fall 2020*

**Mentor,** *Space Generation Advisory Council* *Nov. 2020 – Present*

SGAC Mentoring Program **[](https://spacegeneration.org/mentoring)**

* Provide guidance, give personalized advice, and support to mentees

**Research Assistant,** *Aviation Industry Training Center**Oct. 2018 – Sep. 2020*

Supervised undergraduate students working on the research project by

* Conducted literature reviews; collected, managed, and analyzed data
* Provided ready access to all experimental data for the faculty researcher and supervisor

**Thesis Advisor,** *Aviation Industry Training Center**Sep. 2018 – Sep. 2020*

Supervised B. Eng. theses

* Design and Implementation of A 3 Axis CNC Machine
* Design and Implementation of A CNC Hot Wire
* Design and Implementation of Pulse Circuits Training Board
* Design, Simulate and Build an Aircraft Fire Extinguishing System
* Design and Implementation of Retractable Landing Gear

# Work Experience

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

Black Belt Dan II

* Improve communication skills by teaching students from various backgrounds

**Manager,** *Arman Imen Passargad* *Jan. 2013 – Present*

* Improve leadership and management skills by working with different people in harsh work environments

# LeadershipExperience

**Universal Scientific Education & Research Network** *Jan. 2021 – Jan 2022*

* ***6th* International USERN Congress & Prize Awarding Festival,** *Executive Member*
* **Research Weak,** *Executive Member*
* **Lab Techniques School,** *Executive Member*
* **Minatare Talk,** *Executive Member*
* **USERN Health & Art**, *7th International Festival of Paintings for Pediatric Patients, Executive Member*
* **R&D**, **Publicity**, **Media**, and ***IT,*** *Team Member*

**Tehran University of Medical Sciences** *Jan. 2014 – Dec. 2021*

* ***4th* Student Education Development Festival,** *Executive Member*
* ***20th*, *21st*,** and ***23rd* Conference of Annual General Meeting,** *Executive Member*

**University of Tehran**  *Sep. 2019 – Jul. 2020*

* **Cultural Society KARA**, *Former*
* **Climate Change Conference,** *Organizer*

**Night Sky Institute**  *Mar. 2017*

* **World Astronomy Week**, *Executive Member*

**Civil Aviation Technology College**  *Jan. 2012 – Sep. 2015*

* **WaterRocket Competition,** *Organizer*
  + **Road & Urban Development & The Related Industries Exhibition**, *Executive Member*
  + ***3rd***,***4th***, and ***5th*** **International Aviation & Space Industries Exhibition of Iran,** *Executive Member*

**Pest Control –** *Volunteer Work* *Jan.2013 – Present*

* + Kahrizak Nursing Home
  + Sarai Ehsan Social Victims Center
  + Vardavard Welfare

# Certificates

|  |  |  |
| --- | --- | --- |
| **USERN** | **University of Toronto** (*Coursera*) | **MathWorks** |
| * *Submission & Peer Reviewing* | * *State Estimation and Localization for Self-Driving Cars* | * *MATLAB Onramp* |
| * *Data Analysis in SPSS* | **DeepLearning.AI** (*Coursera*) |  |
| * *Systematic Review* | * *Neural Networks and Deep Learning* |  |
| * *Scientific Writing* | **National Society of Professional Engineers** |  |
| * *Meta-analysis* | * *Bridging the Gap to Leadership* |  |

# Membership & Affiliations

|  |  |
| --- | --- |
| * University of Oxford Responsible Technology Institute Student Network | * University of Tehran Chess Club |
| * Student Chapter of the European Low Gravity Research Association | * Astronomers Without Borders |
| * Space & Satellite Professionals International | * Royal Aeronautical Society |
| * Educational Development Center, TUMS | * Space Generation Advisory Council |

Awards & Honors

**USERN Miniature Talk,** *Appreciated Presenter* *Aug. 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,** *National Competitions*

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

**Nearu Martial Arts,** *Black Belt Dan II* *2015*