Farzan Moosavi

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Research Interest

- **Intelligent Transportation Systems**
- **Machine Learning**
- **Multi-modal Transportation Systems**
- **Optimization**
- **Trajectory Planning**
- **Air Mobility**

Education

Toronto Metropolitan University

PhD in Civil Engineering — *September 2022 - Present*

Transportation Engineering Division

Sharif University of Technology

MSc in Aerospace Engineering — *September 2020 - August 2022*

- GPA: **17.73/20** Via 32 Credits (**3.81/4.0**)

Sharif University of Technology

BSc in Aerospace Engineering and Physics double major — *September 2015 - September 2020*

- GPA: **17.76/20** Via 191 Credits (**3.82/4.0**)

Young Scholar Club (YSC)

Young Scholar Club's Astronomy and Astrophysics — *Summer 2014*

- Studied subjects: Astrodynamics, Orbital mechanics, Data Analysis, Spherical Geometry, Astrophysics, Cosmology

Honors And Awards

Ranked 5th Among Graduate Students of Aerospace Engineering Faculty

Department of Aerospace Engineering Sharif University of Technology — *2020 - 2022*

- Among more than 50 aerospace engineering students.

Being Eligible for Master Study Based on Merit

Considered as a top ranked bachelor in aerospace engineering faculty and having the credit for studying Msc of aerospace engineering in sharif university of technology — *spring 2020*

Space Systems Design Competition - 2nd Place

American Institute of Aeronautics and Astronautics (AIAA) — *July 2019*

- The proposal entitled "IMARS (Intelligent Multi surface Access Reusable Spacecraft)" is responsible for Reusable Lunar Surface Access Vehicle which was considered "gold standard of all AIAA competition reports" by AIAA judges.
- We're being awarded 2nd place among 13 reports from around the globe. See Publication

Ranked 4th Among Undergraduate Students of Aerospace Engineering Faculty

Department of Aerospace Engineering Sharif University of Technology — *2018 - 2020*

- Among more than 70 aerospace engineering students.

Silver Medal of National Astronomy and Astrophysics Olympiad

Young Scholar Club (YSC) — *September 2014*

- Accepted in the Astronomy and Astrophysics Olympiad (first and second level), among 40 chosen students in the country.
- Also Accepted in the Phyiscs and Mathematics Olympiad (first level)

Became a member of Iran's National Elites Foundation

Considered as an elite after achieving silver medal — *2014 - Present*

Experiences

Teaching
Reihan Olympiad Institute

Topics of Astronomy Olympiad — *Winter and Spring 2021*

- Teaching Orbital Mechanics and spherical geometry.

Teaching Assistant
Sharif University

Orbital Mechanic Bachelor Course — *Fall 2020*

- Instructor : Dr. Maryam Kiani

Research Assistant in laboratory
Sharif University

Simulation and Optimization control of simple movement of robotic arm in Simulink and ROS. — *summer 2020*

- Supervisor : Dr. Maryam Kiani

Technical and Executive Staff in World Space Week
Sharif University

Planning and holding educational & training events and seminars — *October 2019*

Teaching Assistant
Sharif University

Advanced Orbital Mechanic Master Course — *Fall 2019*

- Instructor : Dr. Maryam Kiani

Teaching Assistant
Sharif University

Orbital Mechanic Bachelor Course — *Fall 2019*

- Instructor : Dr. Mohammadamin Alandihallaj

Teaching Assistant
Sharif University

Aerodynamic I Bachelor Course — *Fall 2019*

- Instructor : Dr. Mohamad Farshchi

Projects

Navigation and Control of a Free-Flying Satellite for Cargo Transportation and Placement in Intra-Vehicular Environment

Master Thesis — *summer 2021 - summer 2022*

- State estimation of the manipulator's pose and velocity based on feed-forward network and Unscented Kalman Filter (UKF) using IMU.
- Collision-free trajectory planning and control of the free-flier via Deep Deterministic Policy Gradient (DDPG) in a multi-objective package delivery mission.
- Supervisor: Dr. Kiani

Trajectory Optimization of Space Manipulator during Orbital Capture Maneuver

Optimal Control I Course — *spring 2021*

- Optimal control and trajectory planning of 2 DoF free-floating satellite while docking process.

Control of 6 DoF Robotic Arm

Robot Control I Course — *spring 2021*

- Forward kinematic and dynamic modeling of the robot.
- Implementing an adaptive controller in which the EF track the desirable path.

Control of Autonomous Spacecraft Proximity Maneuvers

Spacecraft Dynamic and Control Course — *Fall 2020*

- Control of the attitude and relative position between the two chasing and non-cooperative target spacecraft in the proximity operation.
- Simulation of rendezvous and docking process by implementing an adaptive controller.

Space Debris Removal Using an Electrodynamic Tether

Bachelor's Project — *summer 2020*

- Dynamic and attitude control of the set during rendezvous using classical control method.
- Stability analysis of the set and its effect on reducing the orbital altitude.
- Supervisor: Dr. Assadian

Design of Reusable Lunar Surface Access Vehicle

Project IMARS Submitted on AIAA Space System Design (Group Project) *2018 - 2019*

- Task: Team Leader and Telemetry, Tracking and Command (TT&C) Lead.
- Communication subsystem level analysis and design.
- Supervisor: Dr. Malaek

Simulation of General Relativity Perturbation on Planets and Spacecrafts Trajectory

Advanced Orbital Mechanic Course *Fall 2018*

- Trajectory of planets and satellite simulation and analysis in Schwarzschild metric into Lagrange's planetary equations in MATLAB.

Simulation of Stylized facts of financial markets in Minority Games

Econophysics Master Course (Group Project) *Fall 2018*

- Simulation of market mechanism contributed producers and speculators in Python.

Simulation of electromagnetic radiation for relativistic particle

Special Relativity Course *spring 2018*

- Demonstration of Angular distribution of radiation for point charge in differenet acceleration and direction in Mathematica.

Solar Eclipse Modeling

Computer Aided Design Course *spring 2017*

- Simulation of Solar eclipse and solar panel modeling for energy optimization in Maya.

Skills

Computer Skills Latex, Microsoft Office, Linux (Ubuntu)
Coding Matlab, Python, Mathematica, R
Software AutoCAD, Maya, ROS, Simulink
Language Persian (Native), English (Proficient), French (Beginner)

References

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