

Siavash Sabzy

Curriculum Vitae

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[R^g](#) ResearchGate
[G](#) Github



Research Interests

Astrodynamics
Three-Body Problem

Orbit Determination
Machine Learning

Education

- **Master of Science** **Satellite Technology Engineering**
Iran University of Science and Technology, Tehran, IR **Sep. 2017 - Jan. 2020**
GPA: 3.42/4 (17.10 / 20)
Thesis: "Coupled Orbit and Attitude Dynamics of a Spacecraft in the Ecliptic Restricted Three Body Problem"
Supervisor: Dr. Kamran Daneshjoo
Advisor: Dr. Majid Bakhtiari
- **Bachelor of Science** **Mechanical Engineering**
Shahid Rajaee University, Tehran, IR **Jan. 2013 - Jan. 2017**
Thesis: "Vibration Analysis of a Rotary Shaft with Rigid or Flexible Bearings by Considering the Rotor Gyroscopic Effects"
Supervisor: Dr. Majid Shahgholi
- **High School** **Mathematics and physics**
Alameh Tabatabaei High School **Sep. 2007 - June. 2010**
Aleshtar, Lorestan, Iran

Publications

* click on items (in the PDF-File) - to see the details of publications, academic projects and online courses.

Journals:

- **Siavash Sabzy**, Majid Bakhtiari, Elyas Rashno "Distinguishing Periodic Attitude Motions from Poincaré Sections Using a Compatible Clustering Method", Nonlinear Dynamics, Springer.
- **Siavash Sabzy**, Kamran Daneshjou, Majid Bakhtiari "Periodic attitude motions along planar orbits in the elliptic restricted three-body problem", Advances in Space Research, Elsevier.
- Majid Bakhtiari, Ehsan Abbasali, **Siavash Sabzy**, Amirreza Kosari "Natural Coupled Orbit-Attitude Periodic Motions in the Perturbed-CRTBP including Radiated Primary and Oblate Secondary", Astrodynamics journal, Springer.
- Majid Bakhtiari, Amirhossein Panahyazdan, **Siavash Sabzy** "Prediction of Earth Orientation Parameters using a hybrid Attention-based CNN-GRU Model with a Coordinate Transformation Approach", Journal of aerospace science and technology.

Conferences:

- **Siavash Sabzy**, Bahman Ghorbani Vaghei "Designing Coupled Attitude and Orbit Control System of GEO Satellite During Orbit Transfer", 2018 (DMECONF04). (in Persian)
- **Siavash Sabzy**, Majid Bakhtiari, Kamran Daneshjou "Investigating the Effect of Eccentricity and Mass Ratio of Primaries on the Structure of Lyapunov Orbits", The 19th International Conference of Iranian Aerospace Society.
- **Siavash Sabzy**, Meisam Farajollahi "Dynamical Simulation of MEMS Inertial Sensor for Measuring the Gravity Gradient Torque in Low Earth Orbit", The 19th International Conference of Iranian Aerospace Society. (in Persian)

Academic Background

Academic Projects:

- Design, Implementation and Verification of the Attitude Determination and Control Algorithms for the DelFFi Satellites.
 - Supervisor: **Dr. Seyed Majid Esmaeilzadeh**
- Optimal GNSS Constellation.
 - Supervisor: **Dr. Majid Bakhtiari**
- Simulation of MEMS Inertial Earth Sensor Dynamic for Measuring Gravity Gradient Torque in Low Earth Orbit.
 - Supervisor: **Dr. Meisam farajollahi**

Online Courses:

- Machine Learning offered by Stanford University
- Reinforcement Learning Specialization offered by University of Alberta
- Spacecraft Dynamics and Control Specialization offered by University of Colorado Boulder

Other Academic Activities:

- Teacher Assistant - Advanced Orbital Mechanics
- Journal Reviewer - Nonlinear Dynamics Springer
- Semi-finalist in National Mathematics Olympiad at high school.
- Semi-finalist in National Computer Science Olympiad in two successive years at high school.

Work Experiences

- **IUST Space Research Center** - Tehran, Iran **Researcher**, Sep. 2021 - Now
 - Space Mission Engineering:**
 - Space Systems Simulations [Advanced]
 - Space Systems Design [Basics]
 - Space Radiations [Basics]
 - GNC:**
 - Orbits and Constellations Design [Advanced]
 - Orbit Determination and Control [Advanced]
 - GNSS Constellations/Receiver Simulations [Advanced]
 - Verification of the Model-Based Design approach (MIL, SIL, PIL and HIL testing) [experienced]
 - Software Engineering:**
 - Specific Check-Out Equipment (AOCS Testing Softwares) [Advanced]
 - Ground Station Software [Advanced]
- **LEOCT** - Tehran, Iran **Researcher**, Sep. 2018 - Jan. 2019 (Internship), Feb. 2019 - Sep. 2021 (Full-time)
 - Ephemeris Design for a Low Earth Orbit Global Navigation Satellite System [Advanced]
 - Precise Orbit Determinations (POD) [Advanced]

Language Skills

- **English** Fluent
TOEFL: 104, (R:27, L:30, S:24, W:23)
 - **Appointment Number:** 7574603249657141
 - **Test Date:** March 02, 2024
- **Persian** Native

Skills

Programming Languages

- Matlab
- Python: Numpy, conda-orekit, pyqt5, pymoo, pandas
- Java: JavaFx, orekit

Software

- AGI STK: Systems Tool Kit
- GMAT: General Mission Analysis Tool
- SPENVIS: Space Environment Information System
- ESA MASTER tool
- ESA DRAMA tool

General Softwares

- Git
- LaTeX
- Microsoft Office

References

- **Dr. Majid Bakhtiari**
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- **Dr. Kamran Daneshjoo**
Department of Mechanical engineering, Iran University of Science and Technology, Tehran, Iran
Email: kjoo@iust.ac.ir
Tel: +98-21-77240570 [Home page](#)
- **Dr. Meisam farajollahi**
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