

Siavash Sabzy

Curriculum Vitae

Iran University of Science and Technology, School of New Technologies

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ResearchGate

Github

Date of Birth: Sep, 14, 1993: 30 years



Research Interests

Astrodynamics

Three-Body Problem

Orbit Determination

Machine Learning

Education

Master of Science

Iran University of Science and Technology, Tehran, IR

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

Satellite Technology Engineering

Sep. 2017 - Jan. 2020

Bachelor of Science

Shahid Rajaei University, Tehran, IR

Thesis: "Vibration Analysis of a Rotary Shaft with Rigid or Flexible Bearings by Considering the Rotor Gyroscopic Effects"

Supervisor: Dr. Majid Shahgholi

Mechanical Engineering

Jan. 2013 - Jan. 2017

High School

Alameh Tabatabaee High School

Aleshtar, Lorestan, Iran

Mathematics and physics

Sep. 2007 - June. 2010

Some Courses

- Celestial Mechanics and Orbital Dynamics **18.25/20**
- Satellite Attitude Determination **20/20**
- Special Courses in Satellite Technology (Sensors) **19.5/20**
- Satellite Attitude Control **19.5/20**

Online Courses

- Machine Learning (Stanford University) [Coursera certification](#)
- Reinforcement Learning Specialization (University of Alberta) [Coursera certification](#)
 - Fundamentals of Reinforcement Learning (University of Alberta) [Coursera certification](#)
 - Sample-based Learning Methods (University of Alberta) [Coursera certification](#)
 - Prediction and Control with Function Approximation (University of Alberta) [Coursera certification](#)
 - A Complete Reinforcement Learning System (Capstone) (University of Alberta) [Coursera certification](#)
- Spacecraft Dynamics and Control Specialization (University of Colorado Boulder) [Coursera certification](#)
 - Kinetics: Studying Spacecraft Motion (University of Colorado Boulder) [Coursera certification](#)
 - Kinematics: Describing the Motions of Spacecraft (University of Colorado Boulder) [Coursera certification](#)
 - Control of Nonlinear Spacecraft Attitude Motion (University of Colorado Boulder) [Coursera certification](#)
 - Spacecraft Dynamics Capstone: Mars Mission (University of Colorado Boulder) [Coursera certification](#)

Publications("Click to see")

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 Daneshjoo, 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.

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 Daneshjoo "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)

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]
 - AOCS:**
 - Orbits and Constellations Design [Advanced]
 - Orbit Determination and Control [Advanced]
 - GNSS Hardware/Software (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 [Basics]
- **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: 96, R:28, L:28, S:20, W:20 (**expired**)
 - **Appointment Number:** 4033 1062 1446 1655
 - **Test Date:** June 05, 2021
 - **Next Test Date:** soon.
- **Persian** Native

Skills

Programming Languages

- Matlab
- Python: Numpy, conda-orekit, pyqt5, pymoo
- 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

- LaTeX
- Microsoft Office

Academic Projects

- Analysis of the Spacecraft Attitude Dynamics in the CR3BP by the Mean of Maximum Gravity Torque Surfaces.
 - Supervisor: **Dr. Majid Bakhtiari**
- Design, Implementation and Verification of the Attitude Determination and Control Algorithms for the DelFFi Satellites.
 - Supervisor: **Dr. Seyed Majid Esmailzadeh**
- Investigating the Periodic Solutions of the Coupled Orbit-Attitude Perturbed Circular Restricted Three-Body Problem.
 - Supervisor: **Dr. Majid Bakhtiari**
- Simulation of MEMS Inertial Earth Sensor Dynamic for Measuring Gravity Gradient Torque in Low Earth Orbit.
 - Supervisor: **Dr. Meisam farajollahi**
- Investigating the Effect of Eccentricity and Mass Ratio of Primaries on the Structure of Lyapunov Orbits.
 - Supervisor: **Dr. Kamran Daneshjoo, Dr. Majid Bakhtiari**
- Satellite Lifetime Simulation.
 - Supervisor: **Bahman Ghorbani Vaghei**

References

- **Dr. Majid Bakhtiari**

School of New Technologies, Iran University of Science and Technology, Tehran, Iran

Email: bakhtiari_m@iust.ac.ir

Tel: +98-912-320-6574 [Google scholar](#)

- **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**

School of New Technologies, Iran University of Science and Technology, Tehran, Iran

Email: farajollahi@iust.ac.ir

Tel: +98-21-73225825 [Google scholar](#)