

Siavash Sabzy

Curriculum Vitae

Iran University of Science and Technology, School of New Technologies

+ (00) 98 912 082 4919

✉ siavash_sabzy@alumni.iust.ac.ir

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 Tabatabaei 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, 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.

○ Siavash Sabzy, Majid Bakhtiari, Elyas Rashno "**Distinguishing Periodic Attitude Motions from Poincaré Sections Using a Compatible Clustering Method**", Nonlinear Dynamics, Springer. (Under Review)

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**"

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 DeFFi 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](#)