Iran University of Science and Technology, School of New Technologies

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ResearchGate

Github

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

Siavash Sabzy

Curriculum Vitae

▬▬▬ Research Interests

Astrodynamics	Orbit Determination
Three-Body Problem	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

▬▬▬ Some Courses

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

Work Experiences

o **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/Reciever) 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]

o **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

o **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.
o **Persian**   Native

Skills

Programming Languages
o Matlab
o Python: Numpy, conda-orekit, pyqt5, pymoo
o Java: JavaFx, orekit
Software
o AGI STK: Systems Tool Kit
o GMAT: General Mission Analysis Tool
o SPENVIS: Space Environment Information System
o ESA MASTER tool
o ESA DRAMA tool
General Softwares
o LaTeX
o Microsoft Office

Academic Projects

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

References

o **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**

o **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**

o **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**