Athil P. George **P: 425-492-5473 | E:** athilgeorge23@gmail.com | **A:** 17382 92nd PL NE Bothell, WA 98011

OBJECTIVE

A self-motivated aerospace engineer with six years of experience in studying, and applying engineering principles and to solve complex problems in academic coursework, research, and internships. An inquisitive space enthusiast, highly motivated scientist, and committed innovator with expertise in the GN&C of aerial and space vehicles.

SKILLS

MATLAB/Simulink | C/C++ Programming | Python | Java | Linux | MS Office | CAD: CATIA & SolidWorks | Latex |

EDUCATION

University of Texas at Austin, TX **August 2021 – May 2023**

Master of Science, Aerospace Engineering (ASE) with Focus in Controls, Autonomy, and Robotics (CAR).

Completed graduate classes in control system design and autonomy in aerospace systems and acquired a deep understanding of control theory, Guidance, Navigation, and Controls (GN&C), and its applications in Aeronautics and Astronautics. Acquired technical understanding of machine learning and its ethical and human factors implications on aerospace innovation. Completed a total of six individual capstone-like projects and one group project.

- Project 1: Created a Kalman Filter (KF) and an Extended Kalman Filter (EKF) in MATLAB, and estimated the 2-D state of an aircraft in a coordinated turn. Investigated errors of aircraft state information at a constant altitude turn from radar observations. Acquired technical expertise and detailed knowledge in state estimation and sensor modeling.
- Project 2: Trained a quadrotor to maneuver through a set of static gate waypoints using Python with Pybullet environment and used C++ to implement the control policy. Investigated the feasibility in using machine learning for autonomous UAV tasks. Acquired exposure to the theory behind machine learning and neural networks.
- Project 3: Developed 3 DOF dynamic simulation of chemical rocket. Used frequency domain methods to design a stabilizing controller and assess system stability and structural loads during launch and ascent. Acquired experience in control system design via loop shaping techniques.
- Project 4: Developed a 6 DOF dynamic simulation of a quadrotor. Modeled the dynamics of electromechanical servos and rotor velocities. Used the model to create a controller to follow a reference trajectory using MATLAB's Control System Toolbox. Acquired exposure to underactuated quadrotor dynamics and controller design strategies.
- Project 5: Created an orbit propagation library in MATLAB with J2, J3, and atmospheric drag models. Used the library along with Fortran algorithms prescribed in David Vallado's "Fundamental of Astrodynamics and Applications" for the initial orbit determination (IOD) and state estimation of orbital debris in LEO. Implemented the numerical methods algorithms in Python and MATLAB and documented sample exercise solutions. Gained extensive experience in orbital mechanics and using the Linux OS.
- Project 6: Created a simplified Traffic Collision Avoidance System (TCAS) modeled as a Markov Decision Process. Used probabilistic modeling to demonstrate the probability of an air collision under different circumstances. Acquired a deeper understanding of hybrid automata and their relevance in the aerospace industry.
- Group Project: Planned a conceptual interplanetary mission to Neptune using MATLAB and NASA's SPICE toolkit. Gained experience in mission design/ analysis and documenting system requirements and operations.

University of Washington – Seattle, WA, GPA: 3.54 **September 2017 – June 2021**

Bachelor of Science, Aeronautical Engineering/Astronautical Engineering (AA), Minor in Applied Mathematics (AMATH).

Completed engineering fundamental classes including statics, structural engineering, mechanics of materials, mechanical design methodology, fluids, thermodynamics, physical science, propulsion, controls, and engineering ethics course on space laws and policies. Acquired a broad understanding of Aeronautics and Astronautics through coursework, final capstone, and a personal project.

- Capstone Project: Conceptually planned and designed a 6U intergalactic imaging CubeSat with a team of 10 students. As the gn&c lead, conducted team meetings, ensured work completion, and prepared project documentation for gn&c, electronic system (EPS), and avionics subsystems. Gained experience in conceptual design, project management, iterative design, achieving attitude pointing accuracy through reaction wheel and momentum transfer, and gn&c hardware testing and integration.
- Personal Project: Created a 6 DOF flight simulator of a Research Civilian Aircraft (RCAM) to test the effects of wind perturbation. Closely followed Robert Stengel's "Flight Dynamics" to create decoupled lateral and longitudinal, add fuel slosh dynamics, and investigate aeroelastic modes. Used FlightGear and Simulink Data Inspector for ground tracking as a visualization tool to analyze vehicle stability and flight path subject to dynamic pilot inputs via joystick commands. Developed experience in implementing the equations governing the dynamics of flight in simulation code and documenting relevant code and results.

Massachussets Institute of Technology **January 2023 – March 2023**

Certification, Applied Data Science Program: Leveraging AI for Effective Decision-Making

12-week program that encompasses practical applications of Artificial Intelligence and Machine Learning and leveraging them to solve complex problems and make data-driven business decisions. Developed skills in Google Collaboratory and software presentation in Google Collab. Using the material learned for the program for general knowledge as well as applications to the aerospace industry and carefully documented the learned material. Completed a total of three capstone-like projects and one personal project during the program.

- Personal Project: Gaining experience in making regression models for Turbofan Jet Engine Thrust using altitude, airspeed, and thrust setting data.
- Project 1: Created an ANN model for digit recognition using TensorFlow library in python. Gained exposure to understanding the effects of adding extra layers to the model on performance.
- Project 2: Create a CNN to recognize the mood of a person given their facial expression. Gained exposure to training a CNN with an RGB dataset and learned and applied various theories to validate the performance using test data.

EXPERIENCE

Flight Sciences Engineer | AeroTEC | Seattle, WA **August 2023 – October 2023**

Engineer-in-training for the Flight Sciences team for the Engine Testbed project. Managed documentation and assisted team in various trade study analyses.

- Documented flight performance characteristics of various test cases using a 6 DOF simulation.
- Performed takeoff and landing trade studies.

Teaching Assistant (TA) | University of Texas at Austin | Austin, TX **August 2021 – May 2023**

Teaching assistant for four long semesters in Differential and Integral Calculus. Gained leadership and public speaking skills and acquired a passion for teaching and mentoring students.

- Led bi-weekly classes for 100+ students, administered and graded homework/tests, and provided feedback.
- Provided study material and exercises with solutions and conducted discussions and office hours.
- Documented and provided softcopies of all administered materials with solutions for the department's use.
- Created interactive Google Collab Notebooks (Python) to aid in students' understanding of the material.

Aerospace Systems Engineering Intern | Tethers Unlimited, Inc | Bothell, WA **June 2022 – Aug 2022**

Engineering Intern for Systems Team at Tethers Unlimited. Contributed to verification and validation of a tethered payload in LEO. Gained exposure to refining system architecture, defining technical specifications, performing cost-benefit analysis for hardware procurement, and performing systems testing. Gained experience in debugging software, simulating spacecraft dynamics, and system engineering.

- Created software tools in MATLAB/Simulink simulation for system analysis.
- Created Monte Carlo automation tools that improved simulation run time by 60 %.
- Created documentation on the functionality of software add-ons with sample results.
- Derived key subsystems in the Simulink model from mathematical modeling and orbital mechanics principles.

Aerospace Engineering Intern | AeroTEC | Seattle, WA **March 2021 – August 2021**

Engineering Intern for the Structures Team at AeroTEC. Contributed to designing a flying testbed on a modified Boeing 747-400 airplane for Rolls-Royce.

- Provided technical guidance during flight testing operations.
- Created CAD model for a Boeing 737-800 to assess hangar space.
- Assisted in developing test plans for critical structural test procedures.
- Documented STS stub-wing design verification referencing FAA regulations, procedure anomalies, and stress/strains from structural test flight data.
- Performed advanced weight/balance trade studies for structural tests supervised at the Moses Lake facility.
- Implemented and archived over 100 lookup tables containing aerodynamic performance data such as stability derivatives for a hardware-in-the-loop 6 DOF simulation of a modified Boeing 747.

Undergraduate Researcher | Autonomous Flight Systems Laboratory |Seattle, WA **September 2020 – June 2021**

Contributed to the research and development of autonomous UAV technology alongside university researchers and scientists.

- Performed grass photogrammetry with specialized UAV software (YOLO) to assess fire danger.
- Integrated and tested GNSS and RTK software into Laboratory vehicles.
- Travelled to various sites and performed flight testing and participated in gathering test data for image processing.

Aeronautical Engineering Intern | SDI Engineering INC. | Kirkland, WA **November 2019 – March 2020**

Contributed to the development of a MATLAB/Simulink landing gear and aerial refueling analysis tools.

- Simulated landing gear performance on the Airbus 330 in MATLAB/Simulink.
- Refined landing gear aeroelastic math model used in simulation.
- Prescribed engineering reports for software subsystems including oleo and tire performance.
- Performed tests for a combination of various flight conditions and documented the results.
- Collected and interpreted simulation data.

ACHIEVEMENTS, ACCOLADE

University of Texas at Austin

- Academic Scholarship, August 2021- May 2023

University of Washington – Seattle

- Dean's List, September 2018 – June 2021
- AIAA President Award, March 2020 – June 2021
- Capstone Overall Technical and Film Fest People's Choice Award: 6U CubeSat: Maratus Mission, June 2021
- AA Departmental Honors, January 2021
- Engineering Peer Educator Award, January 2021
- Mart Bert Endowed Scholarship Recipient, March 2020.