

# Malik Nauman Rauf

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## Background

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I am keen to leverage my robust background in aerospace engineering to help clients in the industrial and advanced technology sectors navigate disruption and build sustainable competitive advantages. My experience with control theory provides a unique perspective on optimizing complex systems, and I am eager to apply this problem-solving approach to drive transformative solutions for a pioneering organization like BCG

## Education

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**Georgia Institute of Technology**, MS Aerospace Engineering

Aug 2024 – Jul 2026

- **Grade:** 4.00/4.00
- **Honors:** Fulbright Scholarship
- **Primary Area:** Flight Mechanics and Control
- **Course Projects:**  
“Implementation of Q-learning for Multi-Agent Adversarial Games”; Python; AE 8803 Optimal Control for Learning and Games,  
“Safety Promoting Nearly-Optimal Neural Lyapunov Controllers”; MATLAB; AE 6580 Nonlinear Control

**Institute of Space Technology**, BS Aerospace Engineering

Aug 2018 – Jul 2022

- **Grade:** 3.93/4.00 (Summa Cum Laude)
- **Honors** Valedictorian, and Dual Gold Medalist
- **Capstone Project:** “Designing a Framework for Damage Tolerance Analysis of Metallic Structures
- **Electives:** Flight Control Systems, Spacecraft Dynamics and Controls, Guidance and Navigation of Aerospace Vehicles

## Professional Experience

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**Automation & Controls Engineer**, 4Earth Inc. – Kennessaw, Georgia

July 2025 – Present

- Responsible for assisting in CAD modeling, Design improvements of the Water Treatment unit.
- Programming of Siemens Programmable Logic Controllers (PLC), and Siemens TIA Portal and Human-Machine Interfaces (HMI)
- **Projects**
  - Design and Implementation of an Autonomous Water Treatment unit: Suggested improvements in the design and systems integration leading to 10% improvement in Accessibility and Data Transparency.

**Team Lead (Flight Mechanics & Controls)**, Naqcode Technologies Pvt. Ltd. – Islamabad, Pakistan

Sep 2023 – Jul 2024

- Managed the technical project execution for Propulsion and Controls teams, overseeing design and development efforts.
- **Projects**
  - Design of Vehicle-Top UAV Launcher and Catapult Launch Mechanism: Developed a reusable SUV-Top Launcher with proprietary hook lock, reducing environmental footprint by up to 83%; designed functional and physical system engineering layout. *Tools:* CAD, ANSYS Structural, Capella.
  - Design, Performance Analysis, and Optimization of SRM: Developed an optimization code for SRM and Nozzle design, yielding 31% better propulsive efficiency through parametric studies and genetic algorithms. *Tools:* MATLAB, Genetic Algorithm Toolbox, OpenMotor, Cpropshell.
  - Design and Development of Deployable Stealth UAV: Optimized flying wing airfoil selection across 23 airfoils for 10% longitudinal stability improvement; implemented hierarchical Model-Based System Engineering (MBSE) for Avionics and Flight Control systems. *Tools:* XFLR5, Athena VLM, JavaFoil, ANSYS Fluent, Capella.

**Flight Mechanics & Control Engineer**, Naqcode Technologies Pvt. Ltd. – Islamabad, Pakistan

Aug 2022 – Aug 2023

- Conducted flight dynamics modeling, stability assessment, and developed guidance and navigation strategies for unconventional vehicles.
- **Projects**
  - FDM and Trajectory Control of Precision Glide Vehicle: Integrated axi-symmetric vehicle design tools via Python for optimized geometry generation, showing 6% improvement in inherent stability characteristics. *Tools:* Missile DATCOM, Athena VLM, MATLAB, SIMULINK, Python.
  - FDM and Control Development of Loitering Munition: Developed a Control Surface sizing tool with analytical modeling and aerodynamic analysis, reducing design effort and time by up to 20% (conventional) and 70% (unconventional) for control surface design. *Tools:* Missile DATCOM, Athena VLM, MATLAB, SIMULINK, Aerospace Blockset Simulink.

<b>Aviation Intern</b> , Aviation Training Hub – Islamabad, Pakistan	Nov 2021 – Jan 2022
<ul style="list-style-type: none"> <li>Achieved an 'A' grade in rigorous Avionics Harness testing protocols, demonstrating meticulous attention to detail in verifying electrical connectivity and signal integrity in aircraft systems.</li> <li>Developed comprehensive proficiency in aviation tool identification and usage, contributing to efficient workshop operations and adherence to safety standards.</li> </ul>	
<b>Aerospace Intern</b> , Kamra Aeronautical Complex – Kamra, Pakistan	Aug 2021 – Sep 2021
<ul style="list-style-type: none"> <li>Gained practical insights into aircraft design, manufacturing processes, and quality control procedures, contributing to a deeper appreciation of aerospace production cycles.</li> </ul>	

Additional Experiences

<b>EPD Team Member</b> , Achieved Academy SGAC	Feb, 2025 - Present
<ul style="list-style-type: none"> <li>Working as part of the Communication team in Education and Professional Development Sector of SGAC lead by Achieved Academy</li> </ul>	
<b>Graduate Student Researcher</b> , Georgia Institute of Technology	Oct, 2024 - Present
<ul style="list-style-type: none"> <li>Working as a Graduate student researcher at CASCADES Lab, investigating the problem of Optimal Control in Positive Systems (Tools: <i>MATLAB, Python</i>).</li> <li>Worked as part of the Human Robot Collaboration Project at ROBOTICS Lab. Conducting Real-time experiments on the Manipulator arm collaboration with a Human and another robotic agent (Tools: <i>ROS, Linux, C++ , Python</i>).</li> </ul>	
<b>Co-Founder</b> , All Pakistan Asteroid Search Campaign (APASC) – Islamabad, Pakistan	Aug 2021 – Present
<ul style="list-style-type: none"> <li>Co-founded and launched national campaigns in affiliation with International Astronomical Search Collaboration (IASC) and NASA, serving as Lead of Publications and Technical Writing.</li> </ul>	
<ul style="list-style-type: none"> <li><b>Key Campaigns:</b> <ul style="list-style-type: none"> <li><b>APASC Campaign 2024:</b> Increased teams to 15 (60 participants), volume of applications increased by 7 folds; leveraged Astrometrica</li> <li><b>APASC Campaign 2023:</b> Shortlisted and interviewed 40 participants (10 teams) from over 260 applications, leading to 20 Net Provisional Asteroid Discoveries; launched in collaboration with SGAC. <i>Tools: Astrometrica.</i></li> <li><b>APASC Campaign 2022 (Pilot):</b> Secured 100 applications from 12 institutes, resulting in 14 Provisional Asteroid Discoveries; launched through Space Society IST in collaboration with Attock Astronomical Society. <i>Tools: Astrometrica.</i></li> </ul> </li> </ul>	
<b>Mentor</b> , Space Generation Advisory Council	Dec, 2024 - Present
<ul style="list-style-type: none"> <li>Participated in the 2024 Mentorship Program, and served as an Academic and Professional Mentor to Carl Anthony Sta Ana</li> </ul>	
<b>Teaching Assistant</b> , Institute of Space Technology – Islamabad, Pakistan	Feb 2022 – June 2022
<ul style="list-style-type: none"> <li>Improved Student Understanding of the Topic of Failure by nearly 20% evident by final test performance.</li> </ul>	

Awards

<b>Boeing:</b> Selected for the Georgia Tech Boeing FLT Program, 2025	
<b>Fulbright Scholarship:</b> Awarded the Fulbright Foreign Student Scholarship for Masters	
<b>National Award of Pakistan:</b> International Astronomy and Astrophysics Competition, 2024	
<b>Gold Honor:</b> International Astronomy and Astrophysics Competition, 2024	
<b>Achieved Academy Participant:</b> Selected as a Participant for the 2024 Achieved Academy by SGAC	
<b>Teknofest Turkey:</b> Winner of Black Sea Competition & Honorable Mention Prize in International Free Mission Vehicle Category, 2022	
<b>Six Provisional Asteroid Discoveries:</b> International Astronomical Search Collaboration, 2023	
<b>Bachelor’s Honors:</b> Graduated Summa Magna Cum Laude, 2022; Presidential Gold Medal for Highest Grade, 2022; Vice-Chancellor’s Gold Medal for Best Thesis, 2022; Brigadier Dr. Atiq-ur-Rehman Graduation Prize for Best Student of the Year, 2022; Valedictorian of the Year, 2022; Merit Scholarship Holder, 2018-2022	
<b>Silver Honor:</b> International Astronomy and Astrophysics Competition, 2021	
<b>STEP Scholarship Holder for Bachelors:</b> Awarded the STEP Merit Scholarship for Bachelors, 2018	

Skills

<b>Programming:</b> MATLAB, Python, C++ , C#, <del>ETX</del> LaTeX, SQLite, Oracle SQL, Shell Scripting, HTML, CSS, JavaScript, SysML, Julia, Wolfram, ROS	
<b>Software:</b> Windows, Linux Ubuntu, MacOS, MS Office (Excel, Project, Publisher, Visio), Libre Office, ANSYS WorkBench, ABAQUS, CAD(Catia V5), Inkscape, Flight Dynamics Modelling (Athena AVL, Tornado VLM, US Datcom, XFLR5, Missile Datcom), SIMULINK, Presentation (Beamer, Lucid Press, Lucid Charts), Astrometrica, UNITY Game Development, VIM, Capella/ARCADIA (System Engineering), Aerospace Modeling (VSP, OpenRocket, OpenMotor, Meteor, RDS), Failure Modeling (NASGRO, ANSYS Smart Crack), Valispace, Pschopy	