

# Zeyad M. Manaa

Department of Aerospace Engineering,  
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Education	<b>King Fahd University for Petroleum &amp; Minerals (KFUPM)</b> Jan. 2023 – present; Saudi Arabia M.Sc. in Aerospace Engineering Thesis: “Data-driven Approaches for Flight Dynamics Modeling and Control – On Linear and Nonlinear Techniques for Dynamics Identification and Control” Current GPA: 3.875/4.0 (Cum Laude) <b>University of Science and Technology at Zewail City (UST-ZC)</b> Sep. 2017 - May. 2022; Egypt B.S. in Aerospace Engineering Thesis: “Development of the software package for the attitude determination and control algorithm of a cube satellite” cGPA: 3.3/4.0
Interests	Data-driven modeling and control of dynamical systems – Control theory and optimization – Model reduction and feedback control of dynamical systems – Event-triggered control
Refereed publications	<b>Conference Proceedings</b> [1] <a href="#">Data-driven Discovery of The Quadrotor Equations of Motion Via Sparse Identification of Nonlinear Dynamics</a> <b>Zeyad M. Manaa</b> , Mohamed R. Elbalshy, Ayman M. Abdallah AIAA SCITECH 2024 Forum, AIAA (p. 1308) [2] <a href="#">Koopman-LQR for Quadrotor UAVs from Data</a> <b>Zeyad M. Manaa</b> , Ayman M. Abdallah, Mohamed A. Abido, Syed S. A. Ali Accepted for publication in IEEE SM 2024 [3] Optimum Configuration for Hovering N-Quadrotors Carrying a Slung Payload Mohssen M., Pansy Elkhodary, Meral Badr, Mohammed Sayegh, <b>Zeyad M. Manaa</b> , Ayman M. Abdallah Accepted at AIAA SCITECH 2025 Forum [4] Dynamic Stability Performance Analysis of The BWB Skywalker X-8 Taha Najam, Anafi Sherifdeen Olayinka, Abdul Motayib, Moses James Kehinde, Syed S. A. Ali, <b>Zeyad M. Manaa</b> , Ayman M. Abdallah Accepted at AIAA SCITECH 2025 Forum <b>Journal Papers</b> [5] <a href="#">Novel Airfoil for Improved Supersonic Performance</a> <b>Zeyad M. Manaa</b> , Naef A. A. Qassem The International Journal of Numerical Methods for Heat and Fluid Flow, 2024 <b>Preprints</b> [6] <a href="#">KINETC: Koopman-Inspired Nonlinear Event-Triggered Control from Data</a> <b>Zeyad M. Manaa</b> , Ayman M. Abdallah, Sami El-Ferik Submitted to IEEE Access <b>Patents</b> [7] Efficient Airfoil for Improved Supersonic Performance for Fighters Naef A. A. Qassem, <b>Zeyad M. Manaa</b> Patent ID. 550544US. Status: filed
Research experience	<b>KFUPM, Space and Aviation Electronics Lab</b> Jan 2023 – Present; Dhahran, Saudi Arabia Research Assistant <ul style="list-style-type: none"><li>Researching Koopman operator to globally linearize nonlinear dynamics</li><li>Exploring novel techniques for adaptive and model predictive control using new data-driven techniques</li><li>Developing data-driven event-triggered control frameworks</li></ul> <b>NUST, Aerial Robotics Lab</b> Jun 2022 – Aug 2022; Islamabad, Pakistan Research Intern <ul style="list-style-type: none"><li>Utilized hand gestures to control drones via built-in/web camera using YOLOvX detection models</li></ul>

	<ul style="list-style-type: none"> <li>Developed an autonomous control system for a quadrotor UAV using Tello and COEX Clover devices with ROS</li> </ul>	
	<b>Egyptian Space Agency, ADCS Lab</b>	<i>Aug 2021 – Jul 2022; Cairo, Egypt</i>
	<i>Research Intern</i>	
	<ul style="list-style-type: none"> <li>Conducted the bachelor's thesis research under co-supervision of the Egyptian Space Agency and University of Science and Technology at Zewail City on spacecraft attitude determination and control subsystem</li> <li>Developed the software of the attitude determination and control algorithm of a cube satellite which decreased the detumbling time of the cube satellite</li> <li>Studied and implemented the space environment as a means of Earth's Magnetic Field (IGRF Model), Earth's gravitational field (using Spherical Harmonics) as well as modeling the space disturbances</li> </ul>	
<i>Internships</i>	<b>EgyptAir Maintenance and Engineering</b>	<i>Jun. 2022 – Aug. 2022; Cairo, Egypt</i>
	<i>Aircraft Maintenance Intern</i>	
	<b>Cairo University</b>	<i>Aug. 2021 – Jul. 2022; Cairo, Egypt</i>
	<i>Undergraduate Visiting Student – Space Systems Technology Laboratory</i>	
<i>Teaching</i>	<b>Courses Taught</b>	
	[1] <b>AE 426</b> ; Fall 2023: Introduction to Flight Mechanics (Undergraduate Course)	
	[2] <b>AE 315</b> ; Fall 2023: Systems and Control (Undergraduate Lab); overall evaluation: <b>9.56/10.0</b>	
	<b>Teaching Assistantships</b>	
	[3] <b>AE 540</b> ; Spring 2024: Flight Dynamics and Control I (Graduate Course)	
	<b>Teaching-related Activities</b>	
	[4] <b>AE 350 – CIE 350</b> ; Summer 2023: Monitored undergraduate students' cooperative work in Aerospace Engineering and Control & Instrumentation Engineering Departments	
	[5] <b>AE 399 – CIE 399</b> ; Summer 2023: Oversaw undergraduate students' summer internships workflow in Aerospace Engineering and Control & Instrumentation Engineering Departments	
<i>Talks</i>	<b>Data-driven Modeling and Control in Aerospace Applications</b>	<i>Mar. 2024; Dhahran, KSA</i>
	Host: KIKX @ KFUPM. (Approximately 50 attendees).	
	<b>Data-driven Discovery of The Quadrotor Equations of Motion Via SINDy</b>	<i>Jan. 2024; Florida, USA</i>
	Host: AIAA	
	<b>On POD and DMD for aerodynamic application</b>	<i>May 2023; Dhahran, KSA</i>
	Host: Aerospace Department, KFUPM.	
	<b>Convex optimization for thin airfoil design using linear flow theory</b>	<i>Mar. 2023; Dhahran, KSA</i>
	Host: Aerospace Department, KFUPM.	
<i>Fellowships and awards</i>	<b>Mohammad Al-Aqeel Grant for Graduate Students</b>	<i>KFUPM, 2023</i>
	<b>Graduate Intl. Research Assistance Scholarship</b>	<i>KFUPM, 2023</i>
	<b>Research Intern Scholarship for Intl. Students</b>	<i>NUST, 2022</i>
	<b>Future Work is Digital Scholarship</b>	<i>Ministry of Communications and Information Technology, 2022</i>
	<b>Smart City Hackathon: 1st Place Award in global finals</b>	<i>DAN &amp; Global Project Germany, 2019</i>
	<b>Undergraduate Fellowship</b>	<i>UST-ZC, 2017</i>
<i>Skills</i>	<b>Programming:</b> Python (3 yrs.), MATLAB (4 yrs.), C++ (1.5 yrs.), Julia (basic)	
	<b>Frameworks:</b> Pytorch, OpenCV, Sci-Kit, CVX/PYCVX	
	<b>Other skills:</b> GIT, SolidWorks, ANSYS, Mathematica, bash-scripting, Jupyter Notebook, LaTeX	
	<b>Languages:</b> Arabic (Native), English (C1, IELTS: 7)	
<i>Services</i>	<b>Conference Reviewer:</b> IEEE SMILE 2024, IEEE eSmarTA, 2024, AIAA SCITECH, 2023 – 2024	
<i>Leadership experience</i>	<b>Media Committee Head, Euroavia Zewail City</b>	<i>Egypt, 2020</i>
	Managed a team of 10 people for the Euroavia Egypt student branch	
	<b>Media Committee Head, Zewail City Science Festival</b>	<i>Egypt, 2019</i>
	Managed a team of 15 people for the Zewail City Science Festival mega event	