



Tarek N. Dief
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 Mechanical and Aerospace, COE
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Portfolio YouTube ResearchGate
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Education	Thesis	University	Year
Ph.D., IGSES	Adaptive Flight-Path Control of Kite Power System.	Kyushu University, Japan	2014-2017
MSc., Aerospace	Design And Manufacturing of Quad-Rotor with Autopilot.	Cairo University, Egypt	2012-2014
BSc., Aerospace	System Dynamics and Control (Ranked: 2 nd).	Cairo University, Egypt	2007-2012

HONORS AND AWARDS

- Overall Excellence for all annual and bi-annual evaluation as an assistant professor in the UAE University. [2021-2024]
- Graduate Excellence Award, Kyushu University. [2017]
- Japanese Government Scholarship (MEXT), Kyushu University. [2014–2017]
- Provost’s Graduate Fellowship, Cairo University. [2012–2014]
- Engineering Best Mechanical Engineering Project Award, Egyptian Engineering Day (EED). [2012]
- Engineering Best Graduation Project Award, Egyptian Engineering Syndicate (EES). [2012]
- Engineering Best Graduation Project Award, Cairo University. [2012]
- Engineering Excellence Award, Cairo University. [2012]
- Dean’s Honor List, Cairo University. [2007–2012]

WORK EXPERIENCE

- **Assiatnt Professor of Mechanical and Aerospace** | **UAE University** , Al Ain, UAE [Aug. 2021 – Present]
 - Teaching and research in Space and Aerospace technology.
 - Supervising graduate and undergraduate students.
- **Postdoctoral Fellow** | **University of Alberta** , Edmonton, Canada [Aug. 2020 – Aug. 2021]
 - remote health monitoring and rehabilitation of patients with neurological conditions to minimize the risk of COVID-19 spread in Canadian hospitals
 - Collaborative project with PROTX company.
- **Airplane Development Engineer** | **PD Aerospace Space company (JAXA) LTD., Nagoya, Japan** [July 2019 – July 2020]
 - Design and develop algorithms required for airplane X06 control system.
 - Code software for control system of experiment of airplane X06.
 - Integrate, validate and test X06 software and electronic components.
 - Design, support and conduct X06 flight test.
 - Assist in space plane assembly.
 - Coordinate with suppliers for outsourced.
- **Postdoctoral Fellow** | **Kyushu University, Fukuoka, Japan** [Oct. 2017 – Jul. 2019]
 - Researcher assistant professor for Master students, control systems.
 - Managing a team of 6 MSc and PhD students to build and develop the 10-kW kite power project.
 - Design and built the control unit (KCU) for stabilizing the kite during flight.
 - Model and simulate model for variable-tether-length airborne system.
 - Build a measurement unit and wireless communication system to measure the kite’s position and attitude then send these data to the ground station.

PROFESSIONAL MEMBERSHIPS AND AFFILIATIONS

- **Member:** IEEE (Institute of Electrical and Electronics Engineers).
- **Member:** AIAA (American Institute of Aeronautics and Astronautics).
- **Licensed Professional Engineer:** EES (Egyptian Engineering Syndicate).

RESEARCH AND SCHOLARLY WORKS

Summary: Dr. Tarek is a leading expert in mechanical and aerospace engineering, with a particular focus on Airborne Wind Energy (AWE) and autonomous flight technologies. His research aligns closely with the UAE's Vision for the Aerospace and Renewable Energy Sectors, which emphasizes innovation, sustainability, and technological advancement to position the country as a global leader in these fields. At the United Arab Emirates University (UAEU), Dr. Tarek has led a series of impactful projects and publications that contribute to these national priorities. His work covers several critical areas, including renewable energy, drones, system dynamics for space applications, and airborne wind energy systems, significantly enhancing UAEU's reputation as a pioneering research hub in the Middle East [\[Link\]](#).

Impact on UAE University and Society: Dr. Tarek's research has substantially contributed to UAEU's standing in the global academic community. He has published 18 journal articles, 14 conference papers, and has a robust citation record with 286 citations, an h-index of 10, and an i10-index of 10 (Dated: Sep. 5, 2024) [\[Link\]](#). His work in AWE, in particular, has established UAEU as the sole center dedicated to AWE research in the region. Through substantial internal and external research funding totaling over AED 4 million, he has advanced multiple projects aligned with the UAE's strategic goals in aerospace and renewable energy.

Diversity of Research Fields: Dr. Tarek's research spans diverse fields, including renewable energy, drones, system dynamics for space applications, and airborne wind energy systems. He has made significant advancements in autonomous flight technologies for various drones, including quadrotors, octocopters, and UAVs [\[Link\]](#). His work effectively bridges the gap between theory and practice, with collaborations like the one with **GAL AMMROC** to design UAVs using 3D printing technology, aimed at enhancing the local UAV industry. These projects are supported by significant grants, such as the **NSERC** Alliance Grant in Canada, and have attracted new PhD students to UAEU, with three PhD students currently under his supervision.

Research Funding and Graduate Student Supervision: Supported by various grants totaling over **AED 3.33 million (Internal) and 192,300 Canadian Dollars (External)** awarded since 2021, Dr. Tarek's research explores innovative technologies in renewable energy and aerospace, including novel approaches in airborne wind energy and UAV design optimization. His growing team of **11 graduate students**, including 3 PhD candidates, is expected to significantly expand research outcomes in these areas, further strengthening UAEU's academic impact.

Potential for Increased Research Outcomes: Over the past three years, Dr. Tarek began his research co-/supervision with three master's students, achieving significant results in various fields. Now, with 11 postgraduate students under his co-/supervision, the potential for increased research output is substantial. This expanded team is expected to accelerate the development of innovative solutions in renewable energy, drones, and aerospace system dynamics, reinforcing UAEU's role in advancing these critical fields.

Recognition and Research Influence: Internationally recognized for his pioneering work, Dr. Tarek has been invited to disseminate his findings at scholarly and industrial events and served as a visiting professor at McMaster University, Canada [\[Link\]](#). His research metrics reflect his influence, with 16,400 reads and a score of 389.8 on ResearchGate [\[Link\]](#), alongside his Scopus index of 8 [\[Link\]](#). His publication record includes 88% of his articles in Q1 Quartile Journals, demonstrating the high quality of his contributions.

Collaborations and Broader Impact: Dr. Tarek's research is distinguished by strong collaborative ties with national and international scholars, including those at institutions such as TU Delft, McMaster University, and Kyushu University. These partnerships enhance both the scope and impact of his work, which covers key areas such as system dynamics of drones, satellite navigation and control, and advanced frame design using 3D printing technology [\[Link\]](#). His contributions ensure that UAEU remains at the forefront of research in aerospace engineering and AWE. *Please access my portfolio via this* [\[Link\]](#).

1 - JOURNAL PUBLICATIONS

Table 1: List of Journal Papers

No.	Paper Description	Contribution	Affiliation	Quart.	Cite Score	IF
J1	Robust Twistor-Based Spacecraft Relative Pose Estimation Using Unscented Kalman Filter, <u><i>accepted Astrodynamic</i></u>	Co-author (co-supervised MSc student)	UAEU	Q1	6.9	2.75

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Table 1: (continued)

No.	Paper Description	Contribution	Affiliation	Quart.	Cite Score	IF
J2	Tarek N. Dief, Farag K. Omar, Saeed K. Alnuaimi, Mohamed M. Kamra, Practical Learning in Mechatronics Education: A Case Study on Post-Pandemic Rover Projects, IREASE, <i>accepted-educational paper</i> .	1 st author	UAEU	Q2	3.6	1.8
J3	Atallah, M., Okasha, M., Dief, T.N. and Jallad, A.H., 2023. Optimal consensus control for multi-satellite assembly in elliptic orbit with input saturation. Acta Astronautica, 208, pp.82-90.	Co-author (co-supervised MSc student)	UAEU	Q1	7.2	3.66
J4	Elhesasy, M., Dief, T.N. , Atallah, M., Okasha, M., Kamra, M.M., Yoshida, S. and Rushdi, M.A., 2023. Non-linear model predictive control using CasADi package for trajectory tracking of quadrotor. Energies, 16(5), p.2143.	Corresponding author	UAEU	Q1	6.2	3.5
J5	Elhesasy, M., Khader, R., Dief, T.N. , Kamra, M.M., Okasha, M. and Alnuaimi, S.K., 2024. Experimental Identification of the Translational Dynamics of a Novel Two-Layer Octocopter. Drones, 8(7), p.286.	Corresponding author	UAEU	Q1	5.6	5.4
J6	Haseeb, S.A., Ahmad, Z., Dief, T.N. , Alnuaimi, S.K., Sultan, T., Hayat, K., Younis, M.R. and Zoppi, M., 2023. Fixture layout optimization of sheet metals by integrating topology optimization into genetic algorithm. Applied Sciences, 13(7), p.4395.	Corresponding author	UAEU	Q1	5.3	2.92
J7	Atallah, M., Okasha, M., Dief, T.N. and Omar, F., 2022. Model Predictive Framework for Guidance and Control of a Multi-Satellite Assembly in Elliptic Orbit. International Review of Aerospace Engineering, 15(6), pp.308-320.	Co-author (co-supervised MSc student)	UAEU	Q1	3.8	1.966
J8	Abdollah, V., Dief, T.N. , Ralston, J., Ho, C. and Rouhani, H., 2021. Investigating the validity of a single tri-axial accelerometer mounted on the head for monitoring the activities of daily living and the timed-up and go test. Gait	Co-author (contribution letter is provided)	University of Alberta	Q1	4.3	2.786
J9	Rushdi, M.A., Dief, T.N. , Yoshida, S. and Schmehl, R., 2020. Towing test data set of the Kyushu University kite system. Data, 5(3), p.69.	Co-author	Kyushu University	Q2	3.5	2.99
J10	Rushdi, M.A., Rushdi, A.A., Dief, T.N. , Halawa, A.M., Yoshida, S. and Schmehl, R., 2020. Power prediction of airborne wind energy systems using multivariate machine learning. Energies, 13(9), p.2367.	Co-author (contribution letter is provided)	Kyushu University	Q1	4.7	3.47
J11	Dief, T.N. , Fechner, U., Schmehl, R., Yoshida, S. and Rushdi, M.A., 2020. Adaptive flight path control of airborne wind energy systems. Energies, 13(3), p.667.	1 st author	Kyushu University	Q1	4.7	3.47

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Table 1: (continued)

No.	Paper Description	Contribution	Affiliation	Quart.	Cite Score	IF
J12	Rushdi, M.A., Dief, T.N. , Halawa, A.M. and Yoshida, S., 2020. System identification of a 6 m2 kite power system in fixed-tether length operation. <i>International Review of Aerospace Engineering</i> , 13(4), pp.150-158.	Corresponding author	Kyushu University	Q2	3.3	2.279
J13	Dief, T.N. , Fechner, U., Schmehl, R., Yoshida, S., Ismaiel, A.M. and Halawa, A.M., 2018. System identification, fuzzy control and simulation of a kite power system with fixed tether length. <i>Wind Energy Science</i> , 3(1), pp.275-291.	1 st author	Kyushu University	Q1	6.9	3.8
J14	Dief, T.N. , Kamra, M.M. and Yoshida, S., 2017. Modeling, System Identification, and PID-A Controller for Tethered Unmanned Quad-Rotor Helicopter. <i>Int. Rev. Aerosp. Eng</i> , 10, pp.215-223.	1 st author	Kyushu University	Q1	3.3	2.66
J15	Dief, T.N. and Yoshida, S., 2017. System identification and adaptive control of mass-varying quadrotor. <i>EVERGREEN Joint Journal of Novel Carbon Resource Sciences & Green Asia Strategy</i> , 4(1), pp.58-66, 2017	1 st author	Kyushu University	Q1	4.3	4.25
J16	Dief, T.N. and Yoshida, S., 2016. System identification for quad-rotor parameters using neural network. <i>EVERGREEN Joint Journal of Novel Carbon Resource Sciences & Green Asia Strategy</i> , 3(1), pp.6-1.	1 st author	Kyushu University	Q1	4.3	4.25
J17	Dief, T.N. , Kassem, A. and El Baioumi, G., 2014. Modeling and attitude stabilization of indoor quad rotor. <i>International Review of Aerospace Engineering (IREASE)</i> , 7(2), pp.43-47.	1 st author	Cairo University	Q1	1.2	1.53
J18	Ali, H., Abdelhady, M.G. and Dief, T.N. , 2014. Modelling and Control design of rover vehicle using classic and adaptive control. <i>vcg</i> , 10, p.13.	Corresponding author	Cairo University	Q1	1.2	1.53
J19	Dief, T.N. , Kassem, A.H. and El Baioumi, G.M., 2014. Modeling, robustness, and attitude stabilization of indoor quad rotor using fuzzy logic control. <i>Int. Rev. Aerospace Engin</i> , 7, pp.197-201.	1 st author	Cairo University	Q1	1.2	1.53

2 - Conference proceedings

2024

1. Kamra, M., and **Tarek N. Dief**. "Streamlining Academic Planning in Engineering Education: a Case Study of Innovative Software Implementation at UAEU." In *EDULEARN24 Proceedings*, pp. 2305-2305. IATED, 2024.
2. **Tarek N. Dief**, and M. Kamra. "Enhancing Academic Planning for Mechanical and Aerospace Engineering Students: Development of an Intuitive Student Version of In-House Academic Planning Software." In *EDULEARN24 Proceedings*, pp. 2306-2306. IATED, 2024.
3. Atallah, Mohammed, Mohamed Okasha, **Tarek N. Dief**, and Farag Omar. "Guidance and Control Systems for Multi-Satellite Assembly using Decentralized Nonlinear Model Predictive Control." In *E3S Web of Conferences*, vol. 477, p. 00022. EDP Sciences, 2024.

2023

1. **Tarek N. Dief**, Shouq Almazrouei, Shaima Alshamsi, Aysha Alfalahi, Mohamed Okasha, Mohamed Kamra, and Farag Omar. "Autonomous Flight Control for Drones using Instrumented Gloves Technology." In AIAA AVIATION 2023 Forum, p. 4147. 2023.
2. Alneyadi, Maitha, Shamma Alaryani, Rehema Asifewe, Imane Hemdoui, Aizat Aasim, Mohamed Okasha, Mohamed Kamra, **Tarek N. Dief**, Abduselam Mohammedhaddish, and Maitha AlGhaithi. "Interactive Graphical User Interface for Performance and Flight Dynamics Analysis of Battery-Powered Unmanned Aerial Vehicles." In AIAA AVIATION 2023 Forum, p. 4394. 2023.
3. Atallah, Mohammed, Mohamed Okasha, **Tarek N. Dief**, and Mohamed Kamra. "Twistor-Based Relative Navigation of Satellite Rendezvous in Close Proximity Operations Using Unscented Kalman Filter." In AIAA AVIATION 2023 Forum, p. 4150. 2023.
4. Shashati, Mahmoud, Salem Al Zeyoudi, Osama Al Khatib, Abdoalrahman Hakim, Wan Faris Aizat Wan Aasim, Mohamed Okasha, and **Tarek N. Dief**. "Design and Fabrication of a Solar Powered Unmanned Aerial Vehicle (UAV)." In 2023 Advances in Science and Engineering Technology International Conferences (ASET), pp. 1-10. IEEE, 2023.
5. Alkatheeri, Anoud, Karim Kamalaldin, Mohamed Okasha, Haitham Elshimy, and **Tarek N. Dief**. "Design and Implementation of Attitude Control System for Gnsas 6U Cubesat." In IGARSS 2023-2023 IEEE International Geoscience and Remote Sensing Symposium, pp. 384-387. IEEE, 2023.
6. Mohamed, Elhesasy, **Tarek N. Dief**, Mohamed Kamra, Saeed K. Alnuaimi, Mohamed Okasha, Roland Schmhl. "Flight Path Optimization for Airborne Wind Energy Applications Using Multiple Tethered Aircraft." (2023).

2022

1. Atallah, Mohammed, Mohamed Okasha, **Tarek N. Dief**, and Farag Omar. "Model Predictive Control-Based Guidance and Control System for Simultaneous Multi-Satellite Assembly in Proximity Operation." In 2022 13th International Conference on Mechanical and Aerospace Engineering (ICMAE), pp. 114-124. IEEE, 2022.
2. Atallah, Mohammed, Dhabiya Alkalbani, Maha Alsheryani, Moza Albedwawi, Reem Alshehhi, Reem Almeqbaali, Mohamed Okasha, and **Tarek N. Dief**. "CANSAT Design and Implementation for Remote Sensing Applications." Applied Research and Smart Technology (ARSTech) 3, no. 2 (2022): 56-63.

2020

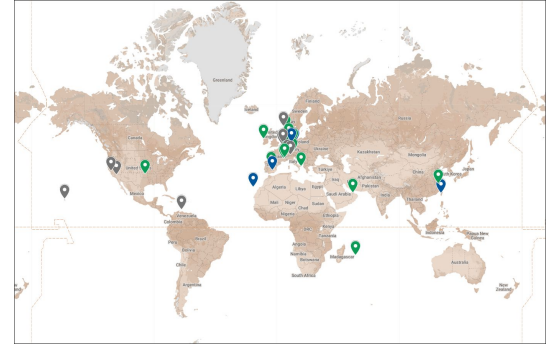
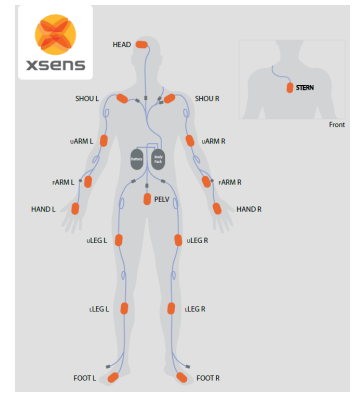
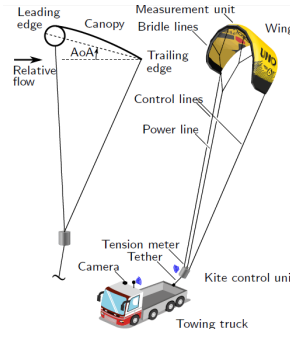
1. **Tarek N. Dief**, Mostafa Rushdi, Amr Halawa, and Shigeo Yoshida. "Hardware-in-the-Loop (Hil) and Experimental Findings for the 7 kW Pumping Kite Power System." In AIAA Scitech 2020 Forum, p. 1244. 2020.
2. Rushdi, Mostafa, Ahmed Hussein, **Tarek N. Dief**, Shigeo Yoshida, and Roland Schmehl. "Simulation of the Transition Phase for an Optimally-Controlled Tethered VTOL Rigid Aircraft for Airborne Wind Energy Generation." In AIAA Scitech 2020 Forum, p. 1243. 2020.

2018

1. **Tarek N. Dief**, Mostafa A. Rushdi, and Shigeo Yoshida. "Modeling and Control of Kite Power System." In Grand Renewable Energy Proceedings Japan Council for Renewable Energy (2018), p. 137. Japan Council for Renewable Energy, 2018.

RESEARCH GRANTS

Dr. Tarek has a sustained record of attracting internal and external research grants totaling approximately (**3.33 million AED (Internal) and 192,300 Canadian Dollars (External)** (since AY 2021-2022 & excluding consultancy grants/contracts). He has been directly involved in a total of **eleven (11) research projects**. Details on the acquired research grants are given below. The fund is a part of a collaboration between different association such as, UAE faculty members, Renewable Energy Center in the UAEU, NSSTC Space Center in the UAEU [\[Link\]](#), TU Delft University in the Netherlands, McMaster University in Canada [\[Link\]](#). *The research grants obtained are the highest among assistant professors in the Mechanical and Aerospace Engineering Department at UAE University.*



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95

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Research Interest Score: **389.8**



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- 43.06% Full-text reads
- 28.34% Other reads

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Your Research Interest Score is higher than 83% of ResearchGate members.

Compared by date of first publication

Your Research Interest Score is higher than 92% of ResearchGate members who first published in 2014.

Compared by research area

Table 2: List of Research Grants since AY 2021-2022 (Consultancy grants/contracts are excluded)

No.	Project Title	Type	Role	Source	Amount	Years
RG. 1	Adaptive-Flight-Path Control for Airborne Wind Energy Systems Operated in Park Configurations	Internal	PI	Strategic	750,000 (AED)	2024-2028
RG. 2	Autonomous Tethered VTOL Aircraft for Airborne Wind Energy Applications	Internal	PI	StartUp	400,000 (AED)	2022-2024
RG. 3	Design and Control Drone with Arm Control for Emergency Applications	Internal	PI	SURE+	40,000 (AED)	2023-2024
RG. 4	Using UAV Drones To Scan The Agricultural Soil's Characteristics.	Internal	PI	SDGs	40,000 (AED)	2022-2023
RG. 5	Autonomous Flight Control for Drones using Instrumented Gloves Technology	Internal	PI	SURE+	50,000 (AED)	2022-2023
RG. 6	Human Detection with IR Thermal Images using a Quadrotor	External	PI	BOEING 2022	10,500 (AED)	2022-2023
RG. 7	Flight-Path Optimization for Multi-Unmanned Aerial Vehicles (UAVs)	External	PI	BOEING 2023	7,000 (AED)	2023-2024
RG. 8	Alliance Grant (Adaptive Flight Path Control for Airborne Wind Energy)	External	CO-PI	NSERC	192,300 (CAD \$)	2024-2027
RG. 9	Robust Multiscale Design Optimization of Additively Manufactured Lightweight UAVs Employing Micro-Architected Lattice Materials	Internal	CO-PI	StartUp	400,000 (AED)	2023-2025
RG. 10	Innovative Hardware and Software Approaches for Enhancing the Testing and Validation of Nanosatellite Attitude Determination and Control Systems	Internal	CO-PI	UPAR	850,000 (AED)	2024-2028
RG. 11	Advancing Sustainable Aviation: Optimizing Design and Control of Blended Wing UAVs for Enhanced Performance and Stability	Internal	CO-PI	UPAR	399,000 (AED)	2024-2026
RG. 12	Development of a novel CFD approach for predicting multiphase flow enhanced by machine learning	Internal	CO-PI	StartUp	400,000 (AED)	2024-2026

SUPERVISION OF GRADUATE STUDENTS

Supervision of Graduate Students at UAE University

Dr. Tarek is currently supervising eleven (11) graduate students (i.e., M.Sc. and Ph.D.) at UAE University. He is the main advisor for three (3) Ph.D. students and the co-advisor for one (1) other. Additionally, he is the main advisor for three (3) M.Sc. students and the co-advisor for four (4) others. Among these M.Sc. students, one (1) graduated in Fall 2023, three (5) are expected to complete their degrees in AY 2024-2025, and two (2) in AY 2025-2026.

Table 3: Supervision of Graduate Students

No.	Student Name	Degree	Thesis Title	Role	Status
1	Pritti Paul	PhD	Advancements in Generator Technology for Enhanced Efficiency in Airborne Wind Energy Systems (<u>tentative title</u>)	Main advisor	2023-present (In progress)
2	Badar Ali	PhD	Adaptive-Flight-Path Control for Airborne Wind Energy Systems Operated in Park Configurations (<u>tentative title</u>)	Main advisor	2024-present (In progress)
3	Yahya Khurshid	PhD	Adaptive Morphing Wing Designs for Enhanced UAV Performance in Airborne Wind Energy Applications (<u>tentative title</u>)	Main advisor	2024-present (In progress)
4	Wan Aizat	PhD	Design of Quadcopter with Crack Mapping capabilities using Thermal and RGBD Cameras	Co-advisor	2022-present (In progress)
5	Moataz Afify	MSc	Design of Path Tracking Control of Quadrotor	Main advisor	2022-present (<i>Fall-24</i>)
6	Mohamed Elhesasy	MSc	Autonomous Tethered VTOL Aircraft for Airborne Wind Energy Applications	Main advisor	2023-present (<i>Spring-25</i>)
7	Dana Alnuaimi	MSc	Modeling and Autonomous Control System for a Delivery Drone	Main advisor	2023-present (<i>Spring-25</i>)
8	Mohamed Ataalla	MSc	Decentralized Guidance, Navigation and Control for Multi-Satellite Assembly in Proximity Operations	Co-advisor	2021-2023 (<i>Completed</i>)
9	Anoud Alkatheeri	MSc	Design and Implementation of Attitude Control System for GNSSAS 6U CubeSat	Co-advisor	2022-present (<i>Fall-24</i>)
10	Aysha Alshamsi	MSc	Development and Simulation of Navigation Systems for VTOL (Vertical Take-Off and Landing) UAVs	Co-advisor	2023-present (<i>Spring-25</i>)
11	Abdulrahman Elazazi	MSc	Integrating Machine Learning with CFD for Superior Multiphase Flow Predictions (<u>tentative title</u>)	Co-advisor	2024-present (In progress)

Publications with Graduate Students in the UAEU.

• Journal Publications

1. Robust Twistor-Based Spacecraft Relative Pose Estimation Using Unscented Kalman Filter (**Accepted - Astrodynamics**)
2. **Elhesasy, M.**, Rashed Khader, Dief, T.N., Mohamed M. Kamra, Mohamed Okasha, and Saeed K. Alnuaimi. "Experimental Identification of the Translational Dynamics of a Novel Two-Layer Octocopter." *Drones* 8, no. 7 (2024): 286.
3. **Atallah, M.**, Okasha, M., Dief, T.N., and Jallad, A.H., 2023. "Optimal consensus control for multi-satellite assembly in elliptic orbit with input saturation." *Acta Astronautica*, 208, pp.82-90.
4. **Elhesasy, M.**, Dief, T.N., Atallah, M., Okasha, M., Kamra, M.M., Yoshida, S., and Rushdi, M.A., 2023. "Non-linear model predictive control using CasADi package for trajectory tracking of quadrotor." *Energies*, 16(5), p.2143.
5. **Atallah, M.**, Okasha, M., Dief, T.N., and Omar, F., 2022. "Model Predictive Framework for Guidance and Control of a Multi-Satellite Assembly in Elliptic Orbit." *International Review of Aerospace Engineering*, 15(6), pp.308-320.

• Conference Papers

1. **Elhesasy, M.**, Dief, T.N., Kamra, M., Alnuaimi, S.K., Okasha, M., and Schmehl, R., 2024. "Flight Path Optimization for Airborne Wind Energy Applications Using Multiple Tethered Aircrafts." In 10th International Airborne Wind Energy Conference (AWEC 2024).

2. **Atallah, M.**, Okasha, M., Dief, T.N., and Omar, F., 2024. "Guidance and Control Systems for Multi-Satellite Assembly using Decentralized Nonlinear Model Predictive Control." In E3S Web of Conferences (Vol. 477, p. 00022). EDP Sciences.
3. **Alkathheeri, A.**, Kamalaldin, K., Okasha, M., Elshimy, H., and Dief, T., 2023, July. "Design and Implementation of Attitude Control System for GNSSAS 6U Cubesat." In IGARSS 2023-2023 IEEE International Geoscience and Remote Sensing Symposium (pp. 384-387). IEEE.
4. **Atallah, M.**, Okasha, M., Dief, T.N., and Kamra, M., 2023. "Twistor-Based Relative Navigation of Satellite Rendezvous in Close Proximity Operations Using Unscented Kalman Filter." In AIAA AVIATION 2023 Forum (p. 4150).
5. **Atallah, M.**, Alkalbani, D., Alsheryani, M., Albedwawi, M., Alshehhi, R., Almeqbaali, R., Okasha, M., and Dief, T.N., 2022. "CANSAT design and implementation for remote sensing applications." Applied Research and Smart Technology (ARSTech), 3(2), pp.56-63.
6. **Atallah, M.**, Okasha, M., Dief, T.N., and Omar, F., 2022, July. "Model predictive control-based guidance and control system for simultaneous multi-satellite assembly in proximity operation." In 2022 13th International Conference on Mechanical and Aerospace Engineering (ICMAE) (pp. 114-124). IEEE.

TEACHING, MENTORING, & ADVISING

1 Publications in Peer-Reviewed Pedagogical Journals

An educational paper has been accepted to an educational journal related journal. The submitted paper details are as follows:

- **Tarek N. Dief**, Farag K. Omar, Saeed K. Alnuaimi, Mohamed M. Kamra, Practical Learning in Mechatronics Education: A Case Study on Post-Pandemic Rover Projects. Interntaion Review of Aerospace Engineering (IREASE).

2 Presentations at International Education Conferences

There are two educational conference presentations offered by Dr. Tarek: one where he is the first author and another where he is the corresponding author. The details are as follows:

1. **Dief, T.N.**, and M. Kamra. "Enhancing Academic Planning for Mechanical and Aerospace Engineering Students: Development of an Intuitive Student Version of In-House Academic Planning Software." in EduLearn24 proceedings, pp. 2306-2306. iated, 2024. [\[Link\]](#).
2. Kamra, M., and **Dief, T.N.**, "Streamlining Academic Planning in Eengineering Education: a Case Study of Innovative Software Implementation at UAEU." in EduLearn24 proceedings, pp. 2305-2305. iated, 2024. [\[Link\]](#).

3 Grants Awarded for Teaching Innovation

The teaching funds I received are mainly provided to support teaching innovation. After submitting a proposal and undergoing an evaluation, the awarded projects receive funding. All funded projects have produced excellent outcomes, documented by videos.

Table 4: List of Teaching Grants AY 2021-2024

No.	Project Title	Type	Role	Source	Amount (AED)	Years
TG. 1	Autonomous Flight Control for Drones using Instrumented Gloves Technology	Internal	PI	SURE+ 2022	50,000	2022-2023
TG. 2	Design and Control Drone with Arm Control for Emergency Applications	Internal	PI	SURE+ 2023	40,000	2023-2024
TG. 3	Using UAV Drones To Scan The Agricultural Soil's Characteristics	Internal	PI	SDGs 2022	40,000	2023-2024
TG. 4	Human Detection with IR Thermal Images using a Quadrotor	External	PI	BOEING 2022	10,500	2022-2023
TG. 5	Flight-Path Optimization for Multi-Unmanned Aerial Vehicles (UAVs)	External	PI	BOEING 2023	7,000	2023-2024

4 Teaching Load and Diversity of Courses

The total workload of Dr. Tarek, from AY 2021-2022 to AY 2023-2024, averaged **25.55** credit hours per academic year. Since joining UAEU in AY 2021-2022, he has taught **fourteen (14) different courses** for both the mechanical and aerospace programs at UAEU. The total number of students enrolled in Dr. Tarek's courses over the 3 academic years, excluding the graduation projects, and postgraduate students, is **681 students**. The details of courses taught are detailed below:

Table 5: Workload per Semester from AY 2021-2022 to 2023-2024.

AY	2021-2022			2022-2023			2023-2024			Avg.
Semester	1 st	2 nd + Summ.	Total	1 st	2 nd	Total	1 st	2 nd	Total	Per AY
Workload	10.91	13.57 + 3	27.48	14.66	9	23.66	11	14.5	25.5	25.55

Table 6: Courses that have been taught with their (frequency)

No.	Course	2021-2022	2022-2023	2023-2024	Fall 2024
1	MECH 210 Measurement and Instrumentation lab	X(4)			
2	AERO 220 Aerospace Lab 1	X(2)	X(2)		
3	MECH 310 Dynamics	X(3)			
4	MECH 409 Dynamic Systems and Control	X(1)	X(5)	X(2)	X(1)
5	AERO 501 Selected Topics in Aerospace Engineering			X(1)	
6	MECH 532 Design of Mechatronics Systems	X(1)		X(2)	
7	AERO 585 Graduation Project I			X(1)	X(1)
8	MECH 585 Graduation Project I	X(1)	X(1)	X(1)	X(1)
9	AERO 590 Graduation Project II				X(1)
10	MECH 590 Graduation Project II	X(1)	X(1)	X(1)	
11	MECH 614 Advanced Control Systems			X(1)	
12	MECH 690 MSc Thesis		X(2)	X(2)	X(1)
13	MECH 800 Dissertation Doctoral Research			X(1)	
14	MECH 900 Comprehensive Exam			X(1)	X(1)

Undergraduate Students Project Supervision

Table 7: Undergraduate Students Project Supervision

Student Name(s)	Project Title	Year	Project Type
Adil Acheere Yahyia Badran Dream Tanashu Fitsum Mekonnen	Design and Control for Vertical Take-Off and Landing (VTOL) System	2023-2024	Capstone (GP)
Shouq Almazrouei Aysha Almarzooqi Aamena Alshehhi Mariam Alshamsi	Flight-Path-Optimization for Multi Unmanned Aerial Vehicles (UAVs)	2023-2024	Capstone (GP)

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Table 7: (continued)

Student Name(s)	Project Title	Year	Project Type
Shaima Alshamsi Mira Alblooshi Mouza Alalawi	Design and Control of an Airship for Long-Endurance Flight	2022-2023	Capstone (GP)
Mohamed Murad Rashed Khader Hazza Alseraihi Faisal AlJaberi	Human Detection with IR Thermal Image using a Drone	2022-2023	Capstone (GP)
Dhabiya Alkalbani Maha Alsheryani Reem Alshehhi Moza Albedwawi Reem Almeqbaali	CanSat Design and Implementation for Remote Sensing Applications	2021-2022	Capstone (GP)
Shouq Almazrouei Sara Alkalbani Nouf Alblooshi Aamena Alshehhi Mariam Alshamsi	Design and Control Drone with Arm Control for Emergency Applications	2023-2024	SURE Plus
Shouq Almazrouei Shaima Alshamsi Aysha Faraj Alfalahi	Autonomous Flight Control for Drones using Instrumented Gloves Technology	2022-2023	SURE Plus
Osama Alkhatib Abdoalrahman Hakim Salem Alzeyoudi Mahmoud Shashati Adam Khasawneh	Using UAV Drones To Scan The Agricultural Soil's Characteristics	2022-2023	SDGs

Industrial Training

Table 8: List of Student Enrollment under my academic advising

Semester	Student ID	Student Name
Summer 2022	201703577	Maitha Hamdan Saeed Nasser Alghaithi
	201735012	Noor Jawdat Ameen
	201709050	Latifa Matar Ali Matar Alneyadi
Summer 2023	201815170	Rashed Khader Ajamy Mahmoud Khader
	201800061	Shouq Matar Khalfan Almazrouei
	201901954	Shaima Ali Mohammed Alshamsi
	201803107	Mohammed Helal Mohammed Alkaabi
	201808606	Mohammed Saeed Matar Alshamsi
Summer 2024	202008613	Abdulrahman Ebrahim Omar Alblooshi
	202007156	Ahmed Saeed Salem Almazrouei
	202081232	Ali Ibrahim Rashid Alsalami
	202008282	Buti Abdulrahman Abdulrahim Aljneibi

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Table 8: (continued)

Semester	Student ID	Student Name
	202007205	Rashed Rashed Obayed Aldhanhani
	202007159	Salem Saeed Salem Almazrouei
	202003774	Saeed Saeed Mohammed Alshamsi
	201903666	Abdulla Ismail Fairouz Alharthi
	201806945	Saif Saif Mohammed Alnuaimi

Table 9: Student Enrollment under my training supervision

Semester	Student ID	Student Name
Fall 2023	201701514	Fatima Alzaabi
	201811215	Meera Alshamsi
Summer 2024	201950306	Fitsum Mekonnen

PhD committees

Dr. Tarek has served as an internal examiner for PhD student graduation theses in the Electrical Department, a comprehensive examiner for PhD students, and a prospectus examiner for PhD students

- **Comprehensive Examiner:** Revathi Ramakrishnan and Wan Faris Aizat
- **PhD Dissertation Examiner:** Omsalama Mubarak
- **Prospectus Examiner:** Vyshak Sureshkumar

Academic Plan Advising

As an academic advisor, Dr. Tarek has overseen an increasing number of undergraduate students in the Mechanical and Aerospace Engineering Department, advising 20 students in the 2021-2022 academic year, 65 in 2022-2023, and 72 in Fall 2024. To accommodate this rapid growth in student enrollment, Dr. Tarek played a key role in co-developing an academic advising tool to minimize human errors in the advising process. This tool efficiently generates student schedules while ensuring compliance with university rules and guidelines, significantly streamlining the advising process for a large number of students.

UNIVERSITY AND COMMUNITY SERVICES

Table 10: Positions, Duties, and Years of Service

No.	Position	Role	Level	Years of Service
1	Industry walk event.	member	<i>College</i>	AY 23-24
2	Grade Appeal and fact finding committees	Member	<i>College</i>	AY 22-24
3	PhD Dissertation, Prospectus and Comprehensive examiner for four (4) PhD students	Member	<i>College</i>	AY 22-24
4	Student Activities AIAA	<i>Chair</i>	Department	AY 22-present
5	Continues Quality Improvements (CQI)	<i>Chair</i>	Department	AY 23-present
6	Scheduling Aerospace Program (AEROSPACE)	<i>Chair</i>	Department	AY 23-present

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Table 10: (continued)

No.	Position	Role	Level	Years of Service
7	Examiner for GP students	Member/ <i>Chair</i>	Department	AY 21-present
8	Equipment committee (Aerospace)	Member/ <i>Chair</i>	Department	AY 23-present
9	Faculty and Staff Hiring	Member	Department	AY 23-24
10	ABET Progress Reports of Aerospace Program	Member	Department	AY 21-22
11	Dynamics and Control Focus Group	Member	Department	AY 21-24
12	PhD Graduate Committee	Member	Department	AY 22-24
13	CAA Progress Reports of Aerospace Program	Member	Department	AY 21-24
14	Computer and IT	Member	Department	AY 22-23
15	Minor propulsion	Member	Department	AY 22-23
16	Academic Advisor for Undergraduate Students	Advisor	Department	AY 23-24
17	Seminar Class MECH660: Presentation "Airborne Wind Energy"	<i>Guest Speaker</i>	Department	AY 23-24
18	Curriculum	Member	Department	AY 23-24
19	Senior Design Projects	Member	Department	AY 23-24
20	Publicity and Outreach	Member	Department	AY 22-23
21	Graduating students and alumni	Member	Department	AY 22-23
22	Aerospace Focus Group	Member	Department	AY 22-24

CONSULTANCY & ADVISORY SERVICES

As the chair of the UAEU section of the American Institute of Aeronautics and Astronautics (AIAA), Dr. Tarek has actively promoted and supported student engagement in the research of drone and UAV technologies, which are of strategic interest to the UAE. His leadership has been crucial in inspiring students to enhance their capabilities by translating theoretical knowledge into practical prototypes. This effort has not only advanced educational enrichment but also facilitated the dissemination of scholarships and research findings from notable aerospace organizations. Additionally, he has rigorously applied international standards across all design phases of graduate projects and postgraduate research, ensuring adherence to globally recognized benchmarks and enhancing the academic rigor of these initiatives. This work has led to attracting international universities and companies for collaboration, as follows:

Table 11: List of National & International Collaborators

No.	Collaborator	Category	Country
1	TU Delft	University	Netherlands
2	University of Freiburg	University	Germany
3	McMaster University	University	Canada
4	Boeing	Company	USA
5	PD Aerospace Space Company - JAXA	Company	Japan
6	EDGE - Halcon	Company	UAE
7	GAL AMMROC	Company	UAE

PRESENTATIONS AT SCHOLARLY & TEACHING EVENTS

Dr. Tarek has contributed to the organization of many professional workshops/activities off-campus summarized below:

Table 12: List of Professional Workshops Off-Campus

No.	Activity Title	Organizer	Location	Year
E 1	COE, UAEU Pavilion and Workshop (Expo 2020)	Dubai Expo 2020	Dubai, UAE	2022
E 2	Drone Experts Workshop	Dubai Police HQ	Dubai, UAE	2022
E 3	Alain Flight Tests	Alain Sportplex Club	Alain, UAE	2022 - present
E 4	NextGen Leaders - Roundtable Nomination Form	Dubai Airshow	Dubai World Center (DWC), Dubai, UAE	2023
E 5	Abu Dhabi Air Show 2022	Air Expo Abu Dhabi	Abu Dhabi, UAE	2022
E 6	Dubai Air Show 2023	Dubai Airshow	Dubai, UAE	2023
E 7	NSSTC Visit	AIAA, UAEU	Alain, UAE	2023
E 8	NSSTC Visit	AIAA, UAEU	Alain, UAE	2024
E 9	Canada Flight Test	McMaster University	Ontario, Canada	2023
E 10	Government Innovation Lab for Traffic and Roads Agency	Dubai RTA	Dubai, UAE	2022

REVIEWING AND EDITORIAL ACTIVITIES

Dr. Tarek has contributed extensively as a referee for a variety of international journals and conference proceedings, reviewing a total of 10 assignments. Below is a list of journals that have been assigned/reviewed over the past 3 years.

Table 13: Summary of Journals and Assigned Papers

No.	Journal	Quartile	No. of Assigned Papers
1	Renewable and Sustainable Energy Reviews	Q1 (5%)	1
2	IEEE Transactions on Vehicular Technology	Q1 (5%)	1
3	Drones	Q1	3
4	Sensors	Q1	1
5	Applied Sciences	Q2	1
6	Vehicles	Q2	1
7	Process	Q2	1
8	Entropy	Q2	1

Moreover, He has membership of Scientific/Technical/Review Committees or Advisory Board of International Conferences:

- Reviewer Committee member:** The TORQUE2024 Scientific Committee in Florence (ITALY); (1) abstract review and (3) conference proceeding.
- Reviewer Committee member:** UAE Graduate Students Research Conference (UAEGSRC'2024), Al Ain, UAE, 2024.

EXTRACURRICULAR ACTIVITIES

- Consistently received 'Excellent' ratings in the annual and biannual performance evaluation cycles.
- Member of the College of Engineering Grade Appeal Revision/Evaluation Committee since 2022. Participated in two grade appeal committees and one fact-finding committee.
- Initiated collaboration between the University of California (UCL) and UAEU's College of Engineering for industrial training, enabling undergraduate students to take their industrial training at UCL. The initiative is ongoing with several meetings held.
- Attended a meeting with the Ministry of Defence at UAEU to explore collaborative opportunities.
- Awarded the Kyushu University Engineering PhD Award in September 2017.
- Awarded the RIAM Fellowship at Kyushu University, Japan, in April 2018.
- Awarded the NRSEC Fellowship at the University of Alberta, Canada, in August 2020.
- Participated in College of Engineering events at the UAEU Pavilion (Expo 2020) with undergraduate and graduate students.
- Collaborated with Al-Ain Sportlex Club management to facilitate flight tests for undergraduate students using drones and UAVs.
- Partnered with AMMROC GAL to provide consultancy services and training opportunities for undergraduate students.
- Represented the College of Engineering at the Maritime Sustainability Research Center event in Abu Dhabi.
- Initiated collaboration with VOLAR, a Hong Kong-based company, in the field of electric Unmanned Aerial Vehicles (e-UAVs).
- Contributed to the development of an advising tool for undergraduate students in the College of Engineering, improving the accuracy of academic planning.
- Attended a workshop organized by Dubai Police with undergraduate students to present their projects and exchange expertise with industry professionals.
- Represented the College of Engineering at IDEX 2023 as part of the UAEU section, showcasing one of six projects from the entire university to engage students in cutting-edge technology.
- Invited to brainstorming workshops by Dubai RTA to discuss the future utilization of drones in various sectors.
- Served as a guest speaker for the Seminar Class MECH660 (Fall 2023 & Spring 2024) on the topic "Airborne Wind Energy."
- Contributed to a one-day symposium on Aerospace Innovations: Materials, Manufacturing, and Aerodynamics for undergraduate and postgraduate students at UAEU during the academic year 2023-2024.
- Appointed as an Airplane Development Engineer at PD Aerospace Company (a subsidiary of JAXA) in Japan.