

SADEQ ISAAC




PhD ~ Aerospace / Robotics

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SUMMARY






Passionate and innovative Robotics Engineer specializing in flight dynamics, control systems, and robotics algorithms. Experienced in designing and developing advanced UAV systems, with a strong foundation in aerospace engineering and hands-on expertise in multi-rotor control, autonomous navigation, and system integration. Committed to advancing cutting-edge technologies in UAV development and contributing to groundbreaking solutions for industrial and research applications.






SKILLS





-  C++, C#, QML, Python, JavaScript, Bash, ROS, MATLAB, LaTeX.
-  Qt, Visual Studio, MCUXpresso, IAR Embedded, Simulink, SolidWorks, Office collection.
-  English - C1,
Spanish - C1,
Persian - Native.

EDUCATION

- Sep 2019 -
Oct 2024

PhD in Automation & Robotics Engineering
 **Specialized in** Flight Dynamics, Control, and Robotics Algorithms.
 [CAR, Polytechnic University of Madrid \(UPM\), Spain.](#)
 **Thesis:** "Control a Multi-Ducted Fan UAV Using Thrust Vectoring."
 **Supervisor:** Prof. Pascual Campoy (pascual.campoy@upm.es).
 **Grade:** Sobresaliente.
- Sep 2016 -
Mar 2019

MS in Aerospace Engineering
 **Specialized in** Flight Dynamics and Control.
 [Amir Kabir University of Technology \(Polytechnic\), Tehran, Iran.](#)
 **Thesis:** "Simulation and Implementation of the Landing Phase of a Quadcopter on a Moving Platform."
 **Supervisor:** Dr. Naghash (naghash@aut.ac.ir).
 **GPA:** 3.6.
- Sep 2011 -
Sep 2015

BS in Aerospace Engineering
 [Khajeh Nasir University of Technology, Tehran, Iran.](#)
 **Thesis:** "Autopilot Code Programming for a Flying Robot Using C#."
 **Supervisor:** Prof. Roshanian (roshanian@kntu.ac.ir).
 **GPA:** 3.5.

PUBLICATIONS

- Feb 2025

 **Unmanned Aerial Vehicle-Based Hyperspectral Imaging and Soil Texture Mapping with Robust AI Algorithms**
[Drones, 2025, 9\(2\), 129](#)
P. Flores Peña, **M.S. Ale Isaac**, D. Gifu, E.M. Pechlivani, A.R. Ragab.
- Sep 2024


 **Advanced Control Strategies for Securing UAV Systems: A Cyber-Physical Approach**
[Applied System Innovation, 2024, 7\(5\), 83](#)
M.S. Ale Isaac, P. Flores Peña, D. Gifu, A.R. Ragab.
- Jun 2024

 **Sensing and Control Integration for Thrust Vectoring in Heavy UAVs: Real-World Implementation and Performance Analysis**
[Unmanned Systems, 2024, 1-23](#)
M.S.A Isaac, P.F. Peña, M.A. Luna, A.R. Ragab, P. Campoy.
- Jun 2023

 **Thrust Vectoring Control for Heavy UAVs, Employing a Redundant Communication System**
[Sensors, 2023, 23\(12\), 5561](#)
Ale. Isaac, M. S., Ragab, A. R., Luna, M. A., Ale Eshagh Khoeini, M. M., and Campoy, P.

- Nov 2022  **A Proposed System for Multi-UAVs in Remote Sensing Operations**
[Sensors, 2022, 22\(23\), 9180](#)
P. Flores Peña, Luna, M. A., Ragab, **Ale. Isaac, M. S.**, Ragab, A. R., Elmenshawy, A., Martín Gómez, K., Campoy, P., and Molina, M.
- Sep 2022  **Medium-Scale UAVs: A Practical Control System Considering Aerodynamics Analysis**
[Drones, 2022, 6\(9\), 244](#)
Ale. Isaac, M. S., Luna, M. A., Ragab, A. R., Ale Eshagh Khoeini, M. M., Kalra, R., Campoy, P., and Molina, M.
- Jun 2022  **Wild Hopper: A Heavy-Duty UAV for Day and Night Firefighting Operations**
[Heliyon, 2022, 8\(6\)](#)
Peña, P. F., Ragab, A. R., Luna, **M. A., Isaac, M. S. A.**, & Campoy, P.
- Mar 2022  **Fast Multi-UAV Path Planning for Optimal Area Coverage in Aerial Sensing Applications**
[Sensors, 2022, 22\(6\), 2297](#)
Luna, M. A., **Ale. Isaac, M. S.**, Ragab, A. R., Campoy, P., Flores Peña, P., and Molina, M.
- Jan 2022  **Systemic Integrated Unmanned Aerial System**
[International Journal of Online & Biomedical Engineering \(iJOE\), 2022, 18\(01\)](#)
P., Flores Peña, Ragab, A. R., Luna, M. A., **Ale. Isaac, M. S.**
- Nov 2021  **Mathematical Modeling and Designing a Heavy Hybrid-Electric Quadcopter, Controlled by Flaps**
[Unmanned Systems, 2022, 10\(03\), 241-253](#)
Ale. Isaac, M. S., Ragab, A. R., Garcés, E. C., Luna, M. A., Peña, P. F., and Cervera, P. C.
- Sep 2021  **WILD HOPPER Prototype for Forest Firefighting**
[International Journal of Online and Biomedical Engineering \(iJOE\), 2021, 17\(09\)](#)
Ahmed Refaat Ragab, **Sadeq Isaac**, Marco A. Luna, Pablo Flores Peña.
- Conf.
Jun 2023  **Spiral Coverage Path Planning for Multi-UAV Photovoltaic Panel Inspection Applications**
[2023 International Conference on Unmanned Aircraft Systems \(ICUAS\)](#)
Luna, M.A., **Ale. Isaac, M. S.**, Fernandez-Cortizas, M., Santos, C., Ragab, A.R., Molina, M., and Campoy, P.
- Conf.
Oct 2021  **Unmanned Aerial Vehicle Swarming**
[2021 International Conference on Engineering and Emerging Technologies \(ICEET\)](#)
Ahmed Refaat Ragab, **Sadeq Isaac**, Marco A. Luna, Pablo Flores Peña.
- Conf.
Sep 2019  **Control and Guidance of an Autonomous Quadcopter Landing Phase on a Moving Platform**
[11th International Micro Air Vehicle Competition and Conference](#)
Ale. Isaac, M. S., Naghash, A., and Mirtajedini, S.
- Book
Sep 2017  **Aerospace Engineering, Graduate Exams with Comprehensive Answers**
[Nasir Publication, 2017](#)
Ale. Isaac, M.S., Navizi, A., Abdol-Mohammadi, N., Sepahvand, I., and Sabahi, I.

EXPERIENCE

- 2022 – Present  **Wake Engineering S.L., Madrid, Spain**
VTOL Solution for Military Fulmar UAV
Wake Engineering S.L., Madrid, Spain
- Developed a VTOL solution tailored for the military Fulmar UAV.
 - Engineered and programmed a resilient Serial/Ethernet communication system to connect avionics, GCS devices, antennas, and UAV using Silvus and Wavenet Radios.
 - Led the EUREKA SW project for ship targeting using UAV Gimbals with navigation through maritime environments.
 - Innovated an Avionics Plugin in collaboration with UAV Navigation for integration into Visionair software.
- VTOL UAV / Communication Systems / Gimbals

- 2023 – Present  **Ahyres Engineering S.L., Madrid, Spain**
GCS Software Interface for Swarm Applications
 Ahyres S.L., Madrid, Spain
- Designed and programmed a user-friendly GCS interface based on QGroundControl.
 - Focused on developing efficient control for swarm UAV applications, enhancing communication and co-ordination between multiple UAVs.
- Swarm UAV / QGroundControl / GCS Interfaces
- 2020 – 2022  **Drone-Hopper S.L., Madrid, Spain**
WILD-HOPPER UAV Development for Firefighting Operations
 Drone-Hopper S.L., Madrid, Spain
- Designed a full controller for the heavy hexa-ducted fan UAV, WILD-HOPPER, using flaps and Electric Ducted Fans (EDFs).
 - Worked on hybrid-propulsion control theory for the QUAD-HOPPER.
 - Developed a user interface platform for swarm applications using Qt for FASTER2020 project.
- UAV Development / Firefighting Operations / Control Systems
- 2019 – 2023  **CAR, UPM, Madrid, Spain**
AUKF and MPC for UAV Trajectory Estimation and Control
 Polytechnic University of Madrid, Madrid, Spain
- Developed an Adaptive Unscented Kalman Filter (AUKF) to estimate UAV Lemniscate trajectory for MBZIRC 2020 challenge.
 - Implemented Model Predictive Control (MPC) on small drones using the Aerostack platform to enhance flight control performance.
- Kalman Filter / Model Predictive Control / UAV Control
- 2017 – 2018  **PROMAK Engineering Company, Tehran, Iran**
Advanced GCS Design for Cartographic Air Vehicles
 PROMAK Engineering Company, Tehran, Iran
- Designed and programmed an advanced GCS for cartographic air vehicles.
 - Focused on improving data processing and flight control for UAV-based mapping.
- Ground Control Station / Cartographic UAV / Data Processing
- 2016 – 2018  **The Amir Kabir University of Technology, Tehran, Iran**
MATLAB Sim-Scape Model and UAV Control Algorithms
 The Amir Kabir University of Technology, Tehran
- Built a MATLAB Sim-Scape dynamic model of a quadcopter, comparing sliding and adaptive control algorithms.
 - Developed image processing techniques using OpenCV and ROS for UAV systems integration.
 - Programmed the Airbus747 simulation in MATLAB/Simulink for flight dynamics analysis.
- MATLAB / UAV Control / Image Processing
- 2014 – 2016  **PARS Engineering Company, Tehran, Iran**
Control Systems and CEP Calculator Design for UAVs
 PARS Engineering Company, Tehran
- Designed a control system for Piccolo Cloud Cap Technology, integrating a Communication Box (COMBox) for virtual autopilot operation.
 - Developed a Circular Error Probability (CEP) calculator for Monte Carlo simulations and real flight tests.
- Control Systems / Monte Carlo Simulation / UAV Technologies
- 2012 – 2015  **The Khajeh Nasir University of Technology, Tehran, Iran**
Pulsejet and Aircraft Design Projects
 The Khajeh Nasir University of Technology, Tehran
- Developed a Pulsejet and studied vortex flows and expansion waves.
 - Analyzed aircraft port-wings using Abaqus software, and performed conceptual design of a commercial aircraft using AAA software.
 - Conducted structural analysis on I-beams using Adams and SAP 2000 software.
- Pulsejet Design / Aircraft Design / Structural Analysis

PROJECTS

- Oct 2018  **English - C1**
 TOEFL score 84 (R: 25, L: 20, S: 22, W: 17)
-  **Spanish - C1**
-  **Persian - Native**