

Nikolaos Giakoumidis

Robotics, AI, and Automation | Autonomous Systems | Real-World Deployment

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Professional Summary

Robotics, AI, and automation engineer with 15+ years of hands-on experience building advanced research infrastructure, developing autonomous systems, and delivering technology for real-world use across the UAE. Brings deep technical expertise in embodied and physical AI, multimodal perception, lab automation, and complex robotic systems, combined with a practical understanding of the operational, administrative, and stakeholder requirements needed to turn advanced technology into deployable projects. Currently focused on scalable multi-agent robotic systems for inspection and real-world deployment, combining technical depth with research translation, external engagement, and implementation across government, industry, and research environments.

Experience

New York University Abu Dhabi (NYUAD) | 2012–Present

Commercial Lead – AI and Robotics | Center for Artificial Intelligence and Robotics (CAIR) | 2025–Present

- Lead commercialization and external engagement activities for CAIR, positioning NYU Abu Dhabi's AI, robotics, and autonomous systems research for industry-facing translation and strategic collaboration.
- Authored **15+ project proposals** within the first year in role, supporting opportunities in embodied AI, physical AI, industrial inspection, logistics, infrastructure, digital twins, and autonomous systems.
- Completed **5 NDAs** with external stakeholders, advancing discussions toward next-stage collaboration.
- Strengthened CAIR's external positioning and collaboration pipeline through strategic exhibitions, technical showcases, lab tours, and stakeholder engagement across the UAE innovation ecosystem.
- Supported the technical and commercial framing of **embodied and physical AI for inspection-focused applications**, aligned with ongoing PhD and research-commercialization work.
- Represented NYUAD and CAIR across high-value engagement platforms including **Make it in the Emirates, DriftX, and ADIPEC**, as well as meetings involving stakeholders such as AD Ports Group, Etihad Rail, GCAA, Kent, Mubadala, MGX, Analog, CycloTech, and Mimik.
- Contributed to a structured external engagement model that included an average of **approximately two visits per week** in 2025, generating proposal requests, technical workshops, lab visits, site visits, pilot discussions, executive follow-ups, and NDA activity.

Research Instrumentation Specialist – Robotics & Automation | Core Technology Platforms (CTP) | 2017–2025

- Established, expanded, and ran key NYU Abu Dhabi laboratories across **Robotics, Photonics, High-Throughput Screening, Electronics, and Advanced Manufacturing**, supporting multidisciplinary research and lab development.
- Led end-to-end technical decision-making across multiple lab environments, covering equipment strategy, vendor selection, system architecture, workflow design, safety procedures, and repair-versus-replacement planning.
- Supported **100+ users** across multidisciplinary research communities, including faculty, researchers, students, and technical users.
- Influenced approximately **\$800K in annual purchasing**, with peak periods reaching approximately **\$3M**, and generated major institutional cost savings through strategic procurement, technical foresight, and in-house repair of high-value systems.
- Restored and maintained complex scientific equipment without vendor support, reducing downtime and avoiding major service or replacement costs.
- Designed and implemented complex supporting infrastructure for lab automation and instrumentation.
- Organized approximately **four student workshops per semester** and co-supervised around **two capstone projects annually**, contributing to their technical training and talent development.
- Operated within demanding safety and regulatory environments involving drones, lasers, and RF systems, while maintaining compliance with university and UAE approval requirements.
- Supported multidisciplinary research output across NYUAD, with technical contributions and infrastructure support recognized in publications and acknowledgements across multiple research domains.

Electronics Engineer, Laboratories | 2013–2017

- Fully established the **Electronics Workshop** and co-established the **Advanced Manufacturing Workshop**, expanding NYUAD's internal capabilities in prototyping, scientific instrumentation, and engineering support.
- Played a key role in planning and relocating research laboratories from the Center for Science and Engineering to the NYUAD Saadiyat campus.
- Supported faculty, researchers, and students across electronics, automation, robotics, and scientific instrumentation.
- Contributed to the operation and technical support of the **High Throughput Screening Platform (HTS)**.
- Delivered in-house troubleshooting, maintenance, and repair of scientific equipment, improving operational continuity and cost efficiency.
- Conducted demonstrations for industry and government delegations, helping showcase research capabilities and strengthen external engagement.

Research Assistant | Interactive Robots and Media Laboratory (IRML) | 2012–2013

- Supported the setup and early development of NYUAD's first robotics laboratory.
- Contributed to robotics research projects and laboratory operations in the Interactive Robots and Media Laboratory.
- Served as a teaching assistant for engineering courses and supported international robotics workshop activities.

Hellenic Armed Forces, Dept. of Advanced Defense Systems | 2011–2012

R&D Engineer

- Conducted R&D activities on small unmanned aerial systems, including fixed-wing and multirotor platforms, during the mandatory National Service in Greece.

Experimental Primary School of Athens | 2010–2011

Teacher of Robotics

- Delivered robotics instruction to school students using LEGO Mindstorms, supporting early STEM engagement.

United Arab Emirates University, Al Ain | 2009–2010

Research Intern | Interactive Robots and Media Lab

- Supported robotics research activities and project execution in the Interactive Robots and Media Lab.

G&D Goumas SA, Athens | 2003–2009

Manager of Industrial and Automotive Equipment

- Managed technical support and training activities for industrial and automotive diagnostic equipment, including Launch diagnostic tools and troubleshooting systems.

Education

University of the Aegean, Greece

PhD Candidate | 2023–Present PhD research focused on autonomous cooperative robotic systems, embodied AI, and deep reinforcement learning.

University of West Attica, Greece

BSc, Automation Engineering | 2012

Selected Certifications

- Dubai Civil Aviation Authority | Professional RPAS Certificate, Multirotor & Fixed Wing, 2023
- NVIDIA Deep Learning Institute | Deep Learning for Robotics, 2019
- KUKA College | KUKA LBR iiwa Commissioning and Programming, 2019
- Udacity | Deep Reinforcement Learning Nanodegree, 2019

Awards

- **First Prize**, RTA Dubai World Challenge for Self-Driving Transport | Delivery Drone, 2021
 - **First Prize**, Design EmbedIT Competition, Shanghai, 2012
 - **First Prize**, World Robot Olympiad, 2009
 - **First Prize**, Digital Week Robotics Competition, Athens, 2008
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Core Competencies

AI, Robotics & Autonomous Systems

Embodied AI, physical AI, autonomous systems, multimodal perception, multi-agent systems, industrial inspection, control, localization, mapping, navigation, path planning, teleoperation, digital twins, computer vision, ground/aerial/underwater robotics, quadruped and humanoid robotics, drone systems, construction robotics, safety systems

Programming, AI & Deployment

Python, C++, C, Java, MATLAB, LabVIEW, PyTorch, TensorFlow, Keras, CUDA, TensorRT, Hugging Face, Ollama, LangChain, RAG pipelines, FastAPI, Flowise, n8n, OpenWebUI, LLM/VLM workflows, Dockerized microservices

Platforms, Simulation & Control

Isaac Sim, Isaac Lab, Gazebo, MATLAB Simulink for robotics simulation, digital twins, synthetic data generation, and sim to real development; PX4, ArduPilot, DJI; robotic platforms including Boston Dynamics Spot, Clearpath Husky, Unitree H1/G1, KUKA, Fanuc, Kinova, and ST Robotics; sensors and spatial systems including LiDAR, radar, thermal, acoustic, and multispectral cameras, motion capture, GNSS, IMUs, and 3D scanners

Selected Publications

- Giakoumidis, N., Anagnostopoulos, C.-N. **“ARM4CH: A Methodology for Autonomous Reality Modelling for Cultural Heritage.”** *Sensors*, 2024.
- Prieto, S. A., Giakoumidis, N., García de Soto, B. **“Multiagent Robotic Systems and Exploration Algorithms: Applications for Data Collection in Construction Sites.”** *International Journal of Robotics Research*, 2024.
- Eid, M., Giakoumidis, N., El Saddik, A. **“A Novel Eye-Gaze-Controlled Wheelchair System for Navigating Unknown Environments.”** *IEEE Access*, 2016.
- Tsoukalas, A., Xing, D., Evangeliou, N., Giakoumidis, N., Tzes, A. **“Deep Learning Assisted Visual Tracking of Evader-UAV.”** *ICUAS*, 2021.
- Xing, D., Tsoukalas, A., Evangeliou, N., Giakoumidis, N., Tzes, A. **“Siamese Adaptive Transformer Network for Real-Time Aerial Tracking.”** *ICUAS*, 2022.
- Giakoumidis, N., Bak, J. U., Gómez, J. V., Llenga, A., Mavridis, N. **“Pilot-Scale Development of a UAV-UGV Hybrid with Air-Based UGV Path Planning.”** In: 2012 10th International Conference on Frontiers of Information Technology, pp. 204–208. IEEE, 2012.

Full publication list available via **Google Scholar**:

<https://scholar.google.com/citations?user=HmOOogwAAAAJ&hl=en>

Patent

- **“An Interactive Tangible Interface for Hand Motion,”** US 2015/0054633 A1.
 - Additional IP development in AI and robotics is ongoing.
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