

Athanasios Ch. Kapoutsis

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Working Status & Research Profile

Assistant Professor (fall 2026) in **Robotics at ECE / Democritus University of Thrace (DUTH)**, Xanthi, Greece

Visiting Researcher (Spring 2026), **Worcester Polytechnic Institute (WPI)**, Worcester, MA, USA

Head of the **AURA lab** (<https://aura-lab.org/>), leading a team of 14 people (including 4x postdocs, 5x PhD candidates and 5x research engineers) working on multi-robot autonomy, AI, and control for real-world applications (border surveillance, smart mobility, precision agriculture, cultural heritage, fire management).

Research work centers on multi-robot systems and swarm robotics, coverage and exploration path planning for UAVs, UGVs and AUVs, reinforcement learning and multi-agent RL, autonomous driving and intelligent transportation, precision agriculture and environmental monitoring, as well as large-scale, distributed and adaptive control.

Education

PhD in Electrical & Computer Engineering – *Democritus University of Thrace (DUTH)*, Greece 2012–2017, *Grade: Excellent*, Thesis: “**Towards a fully autonomous and cooperative deployment of multi-robot teams for exploration and coverage in unknown or partially known environments**”

5-year Diploma (Integrated MEng) in Electrical & Computer Engineering – *Democritus University of Thrace DUTH*, Greece 2007–2012.

Teaching & Supervision

Course Offerings:

- 2025: Large Scale Systems, ECE/Democritus University of Thrace
- 2025: Detection & Estimation Theory, ECE/Democritus University of Thrace
- 2024: Information Systems Analysis & Design (main instructor, MSc), Neapolis University Pafos.

Supervision

- Co-supervision of several **PhD theses** on RL for robotic control, collaborative autonomous vehicles, and neuromorphic decision-making for navigation.
- Co-supervision of **MSc theses** in robotics and autonomous control (e.g. autonomous driving via ML, adaptive control of networks of moving things).

Invited Talks

- “[Overcoming UAV Limitations Through Swarm Intelligence](#)”, RBE Colloquium Speaker Series, Department of Robotics, Worcester, MA, US, 2026.
- “The Untapped Technology of Unmanned Aerial Vehicles”, [Robot Strange in the Multiverse of Robotics EESTEC Workshop](#), ECE, DUTH, Xanthi, Greece, 2022.
- “Multi Robot Coverage Path Planning to Unlock Cooperative Swarm of UAVs”, Keynote in 19th International Bhurban Conference on Applied Sciences & Technology, Islamabad, Pakistan, 2022.
- “DARP: Divide Areas Algorithm for Optimal Multi-Robot Coverage Path Planning”, National Oceanography Centre,

Academic Service

- **Expert evaluator** for the European Commission, under contract with the European Research Executive Agency (REA): EIC Transition calls/Advanced Innovation Challenge Accelerating Physical AI: *Embodied Intelligence for the Next Frontier of AI-Powered Robotics*
- **Associate Editor:** Frontiers in Robotics and AI; IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).
- **Reviewer** for journals and conferences including Automatica, Autonomous Robots, IEEE RA-L, Robotics and Autonomous Systems, Journal of Intelligent & Robotic Systems, Applied Sciences, IEEE Access, IEEE T-AES, ICRA, IROS, ICUAS, and others.
- **Professional memberships:** Technical Chamber of Greece.
- Co-organiser of “**Learning Machines Reading Group**” ([CERTH](#) & [Athena RC](#)) and several workshops / outreach events on robotics and reinforcement learning.

Open-Source Software, Datasets & Online

Software Systems

- *Choosepath*, Holistic Platform for the design and monitoring of multi-UAV missions [[online platform](#)], [[video](#)].
- *DARP*, Divide Areas algorithm for optimal multi-robot coverage path planning. Open-source repository ecosystem [[GitHub](#)], [[GitHub](#)], [[GitHub](#)], [[GitHub](#)], [[GitHub](#)], [[ros wiki](#)], [[GitHub](#)], [[GitHub](#)], [[GitHub](#)], [[GitHub](#)] + 3rd party extensions (among others: [[GitHub1](#)], [[GitHub2](#)], [[GitHub3](#)], [[GitHub4](#)])
- Multi-Robot Coordination Algorithm, Objective-Agnostic, [[GitHub](#)].
- *CoFLY*, User-friendly precision agriculture platform, [[GitHub](#)], [[video](#)].
- MarsExplorer, Coverage of Unknown Terrains via Deep RL and Procedurally Generated Environments, [[GitHub](#)].
- *LFG*, Generation of realistic and diverse large-scale 3D landfill models, [[GitHub](#)].
- *ROBOT IQ*, Open-source and universally adaptable robotics library for any robot, [[GitHub](#)], [[video](#)].
- *ACRE*, Model-free and off-policy reinforcement learning algorithm, specifically designed for the incorporation of additional exploration signals without altering the environment’s rewards, [[GitHub](#)].
- *OverFOMO*, Overcome the Fear Of Missing Out: Active-sensing UAVs coverage for precision agriculture, [[GitHub](#)].
- Multi-Robot-BCD, Real-time learning for a team of multiple UAVs aiming at the collaborative maximization of the quantity and quality of detected objects, [[GitHub](#)].
- *DUNE*: Unified Navigation Environment, [[GitHub](#)], [[video1](#)], [[video2](#)].

Datasets – Resources

- *DroneWaste*: UAV imagery dataset for waste recognition in real landfill sites, [[zenodo](#)].
- *BaleUAVision*: Hay Bales UAV Captured Dataset under different conditions, [[zenodo](#)].
- *Delivering Data*: A Real-World Dataset for Last-Mile Delivery Optimization, One-month dataset of pharmaceutical product delivery tasks from a 3PL provider, [[zenodo](#)].
- *CoFly-WeedDB*, Labeled UAV image dataset for weed detection and species recognition, [[zenodo](#)].

Organizing Research and Dissemination Activities

- *Researcher’s Night*, presenting research results of applying swarms of UAVs in precision agriculture and monitoring of critical infrastructure, Thessaloniki, Greece, 2021 and 2020.
- *Electrical and Computer Engineering Student Conference (ECESCON)* 5, member of the organization committee, Xanthi, Greece, 7-10 April, 2012.
- *Publishing public science-communication articles on [Medium](#)* about reinforcement learning basics, offline RL, and multi-robot coverage.

Honors & Awards

- **Post-doctoral fellowship** ([ESPA / national programme](#)) for work on optimal decision-making in cooperative autonomous vehicles.
- **Performance Award**, [Technical Chamber of Greece](#) (TEE) for top undergraduate performance.
- **IKY State Scholarship** for top performance in 3rd undergraduate year.
- **CERTH fellowships** for final two undergraduate years.
- Multiple **IEEEExtreme programming contest** distinctions (2012, 2014, 2015) – consistently top-6 in Greece, top-250 worldwide.