Alexandros Filotheou

I hold a PhD in Robotics and I am qualified with a Master's degree in Control and Robotics. I have 7+ years of hands-on experience with SLAM, localisation, autonomous navigation, Computer Vision, and general integration and problem-solving. These I have acquired in real conditions with real robots as well as in simulation. I have mainly used ROS and ROS 2, but also MATLAB/Octave, all the while under Linux. My primary coding language is C++ and my secondary Python. I enjoy documenting my motivation and contributions in a clear and concise manner that acknowledges my audience's existing knowledge with regard to code, presentations, technical papers, or tutorials. Most of all I enjoy being a member of a team and solving problems.

Personal Details

Place and Date of Birth	Thessaloniki, Greece | 8 Nov 1987
Current location and Date of CV update	Thessaloniki, Greece | July 2024
Address	Plagiari, 57500, PO Box 530, Thessaloniki, Greece
Phone	(+30) 693 87 87 677
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Work Experience

2023.09 – present **Postdoctoral Research Associate**
Center for Research and Technology Hellas (CERTH), Thessaloniki, Greece

2018.09 – 2023.03 **Robotics Researcher** for NSRF projects
Aristotle University of Thessaloniki, Greece

2016.09 – 2016.11 **Teaching Assistant** · DD2380 Artificial Intelligence
KTH Royal Institute of Technology, Stockholm, Sweden

2011.10 – 2012.03 **Database Designer**
Egnatia Motorway S.A., Thessaloniki, Greece
Design and implementation of a unified database, suitable for the needs of the Instrumental Landslide and Geotechnical Issues monitoring system, in the context of the European Research Program IRIS.

2011.03 – 2011.05 **Application Developer**
Internship · Egnatia Motorway S.A., Thessaloniki, Greece
Design, development and technical and user documentation of a system for data recovery and report-issuing from the company's bridge register using customizable criteria. The application was developed using ORACLE developer tools.

2008.07 – 2009.06 **Telecommunications Engineer**
Hellenic Telecommunications Organisation (OTE S.A.) Thessaloniki, Greece
Remote service in matters of local and wide area networks.

Voluntary Experience

2013.10 – 2014.07 **Computer Vision Engineer** · PANDORA Robotics Undergrad Team, School of Electrical and Computer Engineering, Aristotle University of Thessaloniki
Design of the architecture, implementation and thorough documentation of the Hole Detection system of the PANDORA robot under ROS, using RGB+Depth sensors (Microsoft Kinect and ASUS Xtion) in the context of the conditions of the international RoboCup Rescue competition.

Education

2018.09 – 2023.06 **Doctorate**
Aristotle University of Thessaloniki, Greece
Department of Electrical and Computer Engineering

Thesis · 2D LIDAR sensor pose estimation via scan–to–map-scan matching
Advisor: Prof. Georgios Sergiadis, Department of Telecommunications
Defended: 28/06/2023
Commitee: Georgios Sergiadis (AUTh), Andreas Symeonidis (AUTh), Traianos Yioultsis (AUTh), Zoe Doulgeri (AUTh), Nikolaos Fachantidis (UoM), Aggelos Bletsas (TUC), Anastasios Delopoulos (AUTh)

2015.09 – 2017.06 **Master of Science**
KTH Royal Institute of Technology, Stockholm, Sweden
School of Electrical Engineering
Programme title: *Systems, Control, and Robotics*

Thesis · Robust Decentralized Control of Cooperative Multi-robot Systems: An inter-constraint Receding Horizon approach
Advisor: Prof. Dimos Dimarogonas, Department of Automatic Control

2005.09 – 2013.07 **Diploma**
Aristotle University of Thessaloniki, Greece
Department of Electrical and Computer Engineering
GPA: 7.94/10.0
Class rank: 23/280 – 92^{nd} percentile

Thesis · Multi-label classification using Learning Classifier Systems
Advisor: Prof. Pericles Mitkas, Department of Electronics and Computer Engineering
Commitee: Pericles Mitkas (AUTh), Anastasios Delopoulos (AUTh), Andreas Symeonidis (AUTh)

Publications

Link to Google Scholar

Alexandros Filotheou. "CBGL: Fast Monte Carlo Passive Global Localisation of 2D LIDAR Sensor". In: *Accepted in 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. Oct. 2024

Anastasios Tzitzis, **Alexandros Filotheou**, Aristidis Raptopoulos Chatzistefanou, Traianos Yioultsis, and Antonis G. Dimitriou. "Real-Time Global Localization of a Mobile Robot by Exploiting RFID Technology". In: *IEEE Journal of Radio Frequency Identification* (2023), pp. 1–1. issn: 2469-7281. doi: 10.1109/JRFID.2023.3288982. url: https://ieeexplore.ieee.org/document/10160120/

Alexandros Filotheou, Andreas L. Symeonidis, Georgios D. Sergiadis, and Antonis G. Dimitriou. "Correspondenceless scan-to-map-scan matching of 2D panoramic range scans". In: *Array* 18 (July 2023), p. 100288. issn: 25900056. doi: 10.1016/j.array.2023.100288. url: https://linkinghub.elsevier.com/retrieve/pii/S2590005623000139

Alexandros Filotheou, Georgios D. Sergiadis, and Antonis G. Dimitriou. "FSM: Correspondenceless scan-matching of panoramic 2D range scans". In: *2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. Oct. 2022, pp. 6968–6975. doi: 10.1109/IROS47612.2022.9981228

Alexandros Filotheou. "Correspondenceless scan-to-map-scan matching of homoriented 2D scans for mobile robot localisation". In: *Robotics and Autonomous Systems* 149 (Mar. 2022), p. 103957. issn: 09218890. doi: 10.1016/j.robot.2021.103957. url: https://linkinghub.elsevier.com/retrieve/

pii/S0921889021002323

Alexandros Filotheou, Anastasios Tzitzis, Emmanouil Tsardoulias, Antonis Dimitriou, Andreas Symeonidis, George Sergiadis, and Loukas Petrou. "Passive Global Localisation of Mobile Robot via 2D Fourier-Mellin Invariant Matching". In: *Journal of Intelligent & Robotic Systems* 104.2 (Feb. 2022), p. 26. issn: 0921-0296. doi: 10.1007/s10846-021-01535-7. url: https://link.springer.com/10.1007/s10846-021-01535-7

George Mylonopoulos, Aristidis Raptopoulos Chatzistefanou, **Alexandros Filotheou**, Anastasios Tzitzis, Stavroula Siachalou, and Antonis G. Dimitriou. "Localization, Tracking and Following a Moving Target by an RFID Equipped Robot". In: *2021 IEEE International Conference on RFID Technology and Applications (RFID-TA)*. IEEE, Oct. 2021, pp. 32–35. isbn: 978-1-6654-2657-2. doi: 10.1109/RFID-TA53372.2021.9617436. url: https://ieeexplore.ieee.org/document/9617436/

Antonis Dimitriou, Anastasios Tzitzis, **Alexandros Filotheou**, Spyros Megalou, Stavroula Siachalou, Aristidis R. Chatzistefanou, Andreana Malama, Emmanouil Tsardoulias, Konstantinos Panayiotou, Evaggelos Giannelos, Thodoris Vasiliadis, Ioannis Mouroutsos, Ioannis Karanikas, Loukas Petrou, Andreas Symeonidis, John Sahalos, Traianos Yioultsis, and Aggelos Bletsas. "Autonomous Robots, Drones and Repeaters for Fast, Reliable, Low-Cost RFID Inventorying & Localization". In: *2021 6th International Conference on Smart and Sustainable Technologies (SpliTech)*. IEEE, Sept. 2021, pp. 01–06. isbn: 978-953-290-112-2. doi: 10.23919/SpliTech52315.2021.9566425. url: https://ieeexplore.ieee.org/document/9566425/

Alexandros Filotheou, Emmanouil Tsardoulias, Antonis Dimitriou, Andreas Symeonidis, and Loukas Petrou. "Pose Selection and Feedback Methods in Tandem Combinations of Particle Filters with Scan-Matching for 2D Mobile Robot Localisation". In: *Journal of Intelligent & Robotic Systems* 100.3-4 (Dec. 2020), pp. 925–944. issn: 0921-0296. doi: 10.1007/s10846-020-01253-6. url: https://link.springer.com/10.1007/s10846-020-01253-6

Anastasios Tzitzis, Spyros Megalou, Stavroula Siachalou, Tsardoulias G. Emmanouil, **Alexandros Filotheou**, Traianos V. Yioultsis, and Antonis G. Dimitriou. "Trajectory Planning of a Moving Robot Empowers 3D Localization of RFID Tags With a Single Antenna". In: *IEEE Journal of Radio Frequency Identification* 4.4 (Dec. 2020), pp. 283–299. issn: 2469-7281. doi: 10.1109/JRFID.2020.3000332. url: https://ieeexplore.ieee.org/document/9109328/

Anastasios Tzitzis, **Alexandros Filotheou**, Stavroula Siachalou, Emmanouil Tsardoulias, Spyros Megalou, Aggelos Bletsas, Konstantinos Panayiotou, Andreas Symeonidis, Traianos Yioultsis, and Antonis G. Dimitriou. "Real-time 3D localization of RFID-tagged products by ground robots and drones with commercial off-the-shelf RFID equipment: Challenges and Solutions". In: *2020 IEEE International Conference on RFID (RFID)*. IEEE, Sept. 2020, pp. 1–8. isbn: 978-1-7281-5576-0. doi: 10.1109/RFID49298.2020.9244904. url: https://ieeexplore.ieee.org/document/9244904/

Alexandros Filotheou, Emmanouil Tsardoulias, Antonis Dimitriou, Andreas Symeonidis, and Loukas Petrou. "Quantitative and Qualitative Evaluation of ROS-Enabled Local and Global Planners in 2D Static Environments". In: *Journal of Intelligent & Robotic Systems* 98.3-4 (June 2020), pp. 567–601. issn: 0921-0296. doi: 10.1007/s10846-019-01086-y. url: http://link.springer.com/10.1007/s10846-019-01086-y

Anastasios Tzitzis, Spyros Megalou, Stavroula Siachalou, Traianos Yioultsis, Athanasios Kehagias, Emmanouil Tsardoulias, **Alexandros Filotheou**, Andreas Symeonidis, Loukas Petrou, and Antonis G. Dimitriou. "Phase ReLock - Localization of RFID Tags by a Moving Robot". In: *2019 13th European Conference on Antennas and Propagation (EuCAP)*. 2019, pp. 1–5

Spyros Megalou, Anastasios Tzitzis, Stavroula Siachalou, Traianos Yioultsis, John Sahalos, Emmanouil Tsardoulias, **Alexandros Filotheou**, Andreas Symeonidis, Loukas Petrou, Aggelos Bletsas, and Antonis G. Dimitriou. "Fingerprinting Localization of RFID tags with Real-Time Performance-Assessment, using a Moving Robot". In: *2019 13th European Conference on Antennas and Propagation (EuCAP)*. 2019, pp. 1–5

Alexandros Filotheou, Alexandros Nikou, and Dimos V. Dimarogonas. "Robust decentralised navigation of multi-agent systems with collision avoidance and connectivity maintenance using model predictive controllers". In: *International Journal of Control* 93.6 (June 2020), pp. 1470–1484. issn: 0020-7179. doi: 10.1080/00207179.2018.1514129. url: https://www.tandfonline.com/doi/full/10.1080/00207179.2018.1514129

Alexandros Filotheou, Alexandros Nikou, and Dimos V. Dimarogonas. "Decentralized Control of Uncertain Multi-Agent Systems with Connectivity Maintenance and Collision Avoidance". In: *2018 European Control Conference (ECC)*. IEEE, June 2018, pp. 8–13. isbn: 978-3-9524-2698-2. doi: 10.23919/ECC.2018.8550343. url: https://ieeexplore.ieee.org/document/8550343/

Distictions

2016	Teaching Assistant, DD2380 - Artificial Intelligence, under the supervision of Professor Patric Jensfelt, KTH Royal Institute of Technology, Sweden
2015	2^{nd} place in Autonomy class in RoboCup Rescue as member of PANDORA robotics team
2013	Ranked 30^{th} in graduating class among 224 students who graduated in 2013, ECE, AUTh, Greece
2011	Top of my class in the course of Database Systems, winter semester 2010 – 2011, AUTh, Greece
2005	Ranked 21^{st} in entering class among 280 students who enrolled in 2005, ECE, AUTh, Greece

Computer Skills

Languages	`C/C++`, `Python`, `shell`, `MATLAB/Octave`, {`PL/`}`SQL`, `Java`, `Assembly`
{Meta-}operating Systems	`Linux`, `ROS`
Graphics	`AutoCAD`, `Gimp`
Tools	`git`, `Docker`, `OpenCV`, `Qt (cpp)`, `Tkinter (py)`, LaTeX, `Oracle Forms / Reports`, `Microsoft` {`Visio`, `Project`, `Office`}

Languages

English	Fluent - IELTS Score 8.5
Greek	Mother tongue

Links

Indicative publications:	[1] [2] [3] — google scholar
Indicative software packages:	`cbgl` · `fsm-lo` · `lama-odom` · `pvhd` — `github`
Demos / videos:	`cbgl` · `cultureid` · `fsm` · `relief` · `mpc`
`Portfolio`	

References

Dr. Antonis Dimitriou · Coordinator of the projects for which I worked during my AUTh years
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