

ANATOLI TZIOLA

36 Kitiou Kyprianou Str., Diogenous Bldg, Cyprus University of Technology, Limassol 3041, CYPRUS

+357-25002429 [✉ anatoli.tziola@cut.ac.cy](mailto:anatoli.tziola@cut.ac.cy) [🌐 web](#) [🌐 LinkedIn](#)

RESEARCH INTERESTS

Robotics and autonomous systems, task planning, multi-agent systems, automata theory, formal methods, supervisory control, mobile robots, manufacturing logistics and supply chain optimization.

EDUCATION

Doctor of Philosophy in Robotics and Autonomous Systems **January 2019 – November 2024**

Mechanical Engineering, Cyprus University of Technology

Limassol, Cyprus

Ph.D. Thesis: Task Planning and Control Synthesis for Multi-Agent Systems

Advisor: Prof. Savvas G. Loizou

- Developed a new framework, the SuPERvisory Control Task plannER (SPECTER), for high-level task planning problems with respect to agents' capabilities, constraints and failure modes.
- Developed a new supervisory control framework for heterogeneous multi-agent control synthesis with reactive failure-mode based reconfiguration, leveraging the SPECTER framework.
- A formal analysis of discrete abstraction models in a language specifically developed for the SPECTER.
- Implementing SPECTER task planner for manufacturing logistics and supply chain optimization problems.

Diploma in Production Management Engineering

October 2012 – October 2017

Democritus University of Thrace

Xanthi, Greece

Diploma Thesis: Place Recognition: Efficiency Comparison of Image Local Descriptors.

Graduation Rank: 7th out of a class of 81 students (Highest 8.6 %)

GPA: 8.53/10.0 (EXCELLENCE)

RESEARCH EMPLOYMENT

CIRCULOOS [↗](#)

September 2023 – onwards

- Implementation and expansion of SPECTER task planner to provide optimization recommendations for intra-factory logistics and supply chain arrangements for sustainable production based on life cycle indicators.
- Developed the Supply Chain Optimisation Tool (SCOPT) which leverages model-based and data-driven approaches built on top of the SPECTER task planner.

Better Factory [↗](#)

October 2020 – October 2024

- Expansion of SPECTER task planner methodology.
- Implementation of SPECTER task planner to SMEs (Tapi Nero and Staramaki S.C.) to:
 - determine the minimum number of resources required for the production,
 - to provide recommendations for intra-factory arrangements.
- Mentoring and supporting 3 successful stories of Knowledge Transfer Experiments (KTEs) (FOLD: Europack Bulgaria M Ltd., Shoes in Circle: Tapi Nero, STARIoT: Staramaki S.C.) to:
 - adopt manufacturing process management systems, logistics and resource optimization tools to become cyber-physical systems, transforming them into Lean-agile production facilities.
 - gain access in robotics and digitization technologies to improve efficiency, productivity and products customization.

- Expansion of SPECTER task planner methodology.
- Developed the Business Process Optimization (BPO), an open-source component for manufacturing logistics optimization problems. BPO exploits combinatorial optimizations techniques and implements a custom model checking engine with the capability to incorporate formal models.
- Mentoring and supporting 3 successful pilot application experiments (KLAPPER Consortium: EMKA Sealing Systems S.L., Robotnik, Bosonit and RIOgistics Consortium: KLEFER S.A., CERTH) to:
 - implement advanced technologies to automate intra-factory logistics.
 - gain access in robotics and digitization technologies to improve efficiency, productivity and products customization.

TEACHING EXPERIENCE**Mechanical System Dynamics (MEM324)****Fall 2019 – onwards***Teaching Assistant*

- Cyprus University of Technology, Mechanical Engineering Dept.: Undergraduate course.

Automatic Control I (MEM322)**Spring 2019 – onwards***Teaching Assistant*

- Cyprus University of Technology, Mechanical Engineering Dept.: Undergraduate course.

INVITED TALKS

- [IT.4] “Task Planning and Control Synthesis for Multi-Agent Systems”, Cyprus University of Technology, Department of Mechanical Engineering and Materials Science Engineering, November 2024.
- [IT.3] “Autonomous Task Planning for Heterogeneous Multi-Agent Systems”, Cyprus University of Technology, Department of Mechanical Engineering and Materials Science Engineering, November 2023.
- [IT.2] “Autonomous Task Planning for Heterogeneous Multi-Agent Systems”, Rice University, Houston, TX, USA, July 2023 (Online presentation to the group of Prof. Lydia Kaviraki).
- [IT.1] “Autonomous Task Planning for Heterogeneous Multi-Agent Systems”, Georgia Institute of Technology (Georgia Tech.), Atlanta, GA, USA, October 2022 (Online presentation to Prof. Spyridon Reveliotis).

PROFESSIONAL ACTIVITIES**Reviewer**

- IEEE Conference on Robotics and Automation.
- IEEE Conference on Decision and Control.
- IEEE Mediterranean Conference on Control and Automation.

Seminars

- Autonomy Talks, Institute for Dynamic Systems and Control, ETH Zurich, Fall-Summer Seminars, online.
- Fall-Summer Seminars by UPenn GRASP Laboratory, Pennsylvania, USA, online.
- Fall Seminars, Robotics Control and Decision Systems (RCDS) Laboratory/DIH, Cyprus University of Technology, Limassol, Cyprus, 2023.
- 2021-2022 Fall Seminars by Department of Mechanical Engineering and Materials Science and Engineering, Cyprus University of Technology, Limassol, Cyprus.
- Horizon Europe Proposal Writing Webinar by Research and Innovation Foundation (RIF), September 2021.

Workshops

- Compositional Robotics: Mathematics and Tools, Workshop on 2022 IEEE International Conference on Robotics and Automation (ICRA22), ETH Zurich, May 2022.

Professional Memberships

- Technical Chamber of Greece (TEE).

Organizer

- Fall Seminars, Robotics Control and Decision Systems (RCDS) Laboratory/DIH, Cyprus University of Technology, Limassol, Cyprus, 2023.
- Info Session 2019 - L4MS, RIMA (co-organizer), Cyprus University of Technology, Limassol, Cyprus, Fall 2019.

TECHNICAL SKILLS

Languages: C++, Python, MatLab.

Developer Tools: VS Code, CLion, PyCharm.

Technologies/Frameworks: Linux (Ubuntu), ROS, LaTeX, Windows 10, Microsoft 365 (Office), GitHub, GitLab, FIWARE, RAMP IoT.

JOURNAL ARTICLES

- J.2 A. A. Tziola, S. G. Loizou, “Supervisory Control Synthesis for Multi-Agent Systems with Failure-Mode Reconfiguration”, (under preparation).
- J.1 A. A. Tziola, S. G. Loizou, “A Formal Framework for Multi-Agent Task Planning”, (under review, IEEE Transactions on Automatic Control).

CONFERENCE PUBLICATIONS

- C.4 A. A. Tziola, S. G. Loizou, “Multi-Agent Control Synthesis with Reactive Failure-Mode based Reconfiguration”, (under review, European Control Conference (ECC)).
- C.3 A. A. Tziola, S. G. Loizou, “Discrete Abstractions for Manufacturing Logistics Optimization for the Food Service Industry”, 2024 IEEE International Conference on Control, Decision and Information Technologies (CoDiT 2024), Valletta, Malta, July, 2024.
- C.2 A. A. Tziola, S. G. Loizou, “Manufacturing Logistics Optimization using the SPECTER Task Planner: A Shoe Manufacturing Logistics Case Study”, European Robotics Forum 2024 (ERF2024), Rimini, Italy, March, 2024.
- C.1 A. A. Tziola, S. G. Loizou, “Autonomous Task Planning for Heterogeneous Multi-Agent Systems”, 2023 IEEE International Conference of Robotics and Automation (ICRA23), London, UK, May, 2023.

PRE-PRINTS

- PP.1 A. A. Tziola and S. G. Loizou, “Autonomous Task Planning for Heterogeneous Multi-Agent Systems,” arXiv Preprint arXiv:2209.08611, 2022.