Fotios Lygerakis

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Core Competences

- **Machine Learning / Deep Neural Networks**
- **Robotics / Sensors / Human - Robot Collaboration**
- **Progress and vision-oriented / Analytical Thinking**
- **TimeManagement / Reporting**

Technical Skills

- **ML Libraries:** Torch, Tensorflow, Sci-Kit Learn, Pandas
- **Languages:** Python, C++, C, C#, MatLab, SQL, BASH
- **Tools**: Pycharm, Eclipse, Git, Unity3D, slurm, docker
- **OS/Middleware**: Linux, ROS, Windows

Working Experience

Research Associate, University of Leoben, Austria — March 2022-Today

Reinforcement Learning, Robotics, Transfer Learning, Unsupervised Learning

Teaching Assistant, University of Texas at Arlington, USA — Jan 2020 - Dec 2021

Machine Learning, Object-Oriented Programming, Discrete Structures, Electrical Circuits

Research Assistant, National Center for Scientific Research Demokritos, Greece — Summer 2020 - 2021

Human-computer collaborative interface [project].
Reinforcement learning (ROS-integrated) algorithms for real-time collaborative learning with a human. [project]
Gradient allocation mechanism that reduces human engagement by 28%. [pub] [project]

Research Assistant, National Center for Scientific Research Demokritos, Greece — Sep- Dec 2019

Design and development of a human 3D pose tracking system on ROS using OpenPose.
Data collection from human subjects and accuracy evaluation of the system. [pub] [project]
Fine-tuning of BERT (Tensorflow) on a greek corpus dataset for chatting application on a Pepper robot. [project]

Research Intern, Cambridge Research Lab, Toshiba Research Europe Limited, UK — January - May 2019

Combination of sample-efficient RL and Deep autoencoders for compact and robust low dimensional representations.
Experimentation on a gpu cluster. Autoencoders' performance gain up to 63% against the baseline. [pub]
Proposed combination of RL algorithm - representation resulted in 76% performance gain against the baseline. [pub]

Education

Doctor of Philosophy Candidate in Computer Science, University of Leoben, Austria — 2022 - Today

Supervisor: Univ.-Prof. Dr. Elmar Rueckert
Topics: Reinforcement Learning, Robotics, Transfer Learning, Unsupervised Learning

M.Eng. in Electrical and Computer Engineering, Technical University of Crete, Greece — July 2019

(GPA: 8.06/10) Thesis: Robust belief state space representation for statistical dialogue managers using deep autoencoders.

Volunteering, Professional Activities and Services

- **Reading Group Organizer(2022-Today):** Chair of Cyber-Physical Systems, University of Leoben
- **Reviewer:** IEEE IROS, IEEE Intelligent Systems, PETRA
- **Workshop Chair:** AI and Digital Technologies in Coronavirus Pandemic and Beyond, PETRA 2021
- **Undergraduate Student Manager (2020 - 2021),** University of Texas at Arlington, USA
- **Conference Proceedings and Editorial Committee:** ECESCON 9, PETRA 2021
- **Robotics Club "Kouretes" Volunteer (2016-2018):** Behavioral programming of NAO robots.

Journal Publications

- Kyrarini, M., Lygerakis F., et al. **A Survey of Robots in Healthcare**. Technologies 2021, 9, 8. [link]
- V. Diakoloukas, F. Lygerakis, et al, "**Variational Denoising Autoencoders and Least-Squares Policy Iteration for Statistical Dialogue Managers**," in IEEE Signal Processing Letters [link]
- F. Lygerakis, "**Robust Belief State Space Representation for Statistical Dialogue Managers Using Deep Autoencoders**," Thesis, Technical University of Crete, Chania, June, 2019. [link]

Conference Publications

- F. Lygerakis, et al, **Accelerating Human-Agent Collaborative Reinforcement Learning**, PETRA 21, 2021 [link]
- D. Banerjee, F. Lygerakis et al, **Sequential Late Fusion Technique for Multi-modal Sentiment Analysis**, PETRA 21, 2021 [link]
- F. Lygerakis, et al, "**Evaluation of 3D markerless pose estimation accuracy using OpenPose and depth information from a single RGB-D camera**,"PETRA 20 [link]
- F. Lygerakis, et al, "**Robust Belief State Space Representation for Statistical Dialogue Managers Using Deep Autoencoders**," 2019 IEEE Automatic Speech Recognition and Understanding Workshop (ASRU), SG, Singapore, 2019, pp. 1055-1061. [link]