Athanasios Polydoros

Position	Postdoctoral Researcher and Lecturer	**Current Employer**	EPFL, Switzerland
Address	Chemin de la Foret 4B	**Mobile Phone**	+41 78 342 4312
	1018 Lausanne	**Email**	athanasios.polydoros@epfl.ch
	Switzerland	**Nationality**	Greek
Website	`https://athapoly.github.io`	**Date of Birth**	29th September 1987

Research Interests

Machine Learning	Bayesian Methods
Robot Learning	Deep Learning
Reinforcement Learning	Industrial Robotics

Academic Positions

1/10/18-Today Postdoctoral Researcher and Lecturer - EPFL, Switzerland

Research: *Learning latents spaces of dynamic systems*
Teaching: *Machine Learning related courses*

1/4/17-31/8/18 Postdoctoral Researcher - University of Innsbruck, AT

Research: *Movement Learning from Demonstration and Reinforcement Learning*

Education

1/12/13-31/3/18 Ph.D. Robot Learning -Aalborg University, DK

Thesis: *Online Learning of Industrial Manipulators' Dynamics Models*

1/10/12-30/8/13 M.Sc. Artificial Intelligence with Distinction - University of Edinburgh, UK

Thesis: *Effect of Internal Models on Self-organized Controllers*

1/9/05-30/7/11 Dip. Eng. Production Engineering - Democritus University of Thrace, GR

Thesis: *System modeling and pattern recognition using Hebbian Learning*

Projects

2019 - SecondHands

Funding: EU H2020
Role: Investigator
Duties: Learning latent spaces of dynamical systems

2018 -2019 Cogimon – Cognitive Interaction in Motion.

Funding: EU H2020
Role: Investigator
Duties: Learning latent spaces of dynamical systems

2017 -2018 FlexRoP – Flexible, assistive robot for the customized production.

> Funding: FFG (Austria)
> Role: Investigator
> Duties: Learning from demonstration, Motion verification and optimization

2018 -2018 IMAGINE – Robots Understanding Their Actions by Imagining Their Effects

> Funding: EU H2020
> Role: Investigator
> Duties: Optimization of actions via reinforcement learning

2013 -2017 STAMINA – Sustainable and Reliable Robotics for Part Handling in Manufacturing Automation

> Funding: EU-FP7
> Role: Researcher
> Duties: Dynamics Model learning for control

Teaching & Supervision:

Courses:

2018-2019 Applied Machine Learning
M.Sc. – EPFL, Switzerland

2018 Machine Learning Programming
M.Sc. – EPFL, Switzerland

2017 Autonomous & Intelligent Systems
B.Sc. Computer Science – University of Innsbruck, Austria

Seminars:

2017 Odometry for Intelligent Robots
B.Sc. Computer Science – University of Innsbruck, Austria

2015 - 2016 Introduction to Data Mining & Machine Learning
M.Sc Global System Design – Aalborg University, Denmark

2016 Programming Universal Robots with URmat
M.Sc. Global Systems Design – Aalborg University, Denmark

2015 Introduction to Matlab
M.Sc Global System Design – Aalborg University, Denmark

Supervision:

2014 – 2019 Multiple Students' Semester Projects,
Aalborg University and EPFL

Publications

Journals

[J1] Harish Ravichandar, Athanasios S. Polydoros, Sonia Chernova, and Aude Billard. Robot learning from demonstration: A review of recent advances. *Annual Review of Control, Robotics, and Autonomous Systems*, page In Press, 2019.

[J2]   Athanasios S Polydoros and Lazaros Nalpantidis. Survey of model-based reinforcement learning: Applications on robotics. *Journal of Intelligent & Robotic Systems*, 86(2):153–173, 2017.

[J3]   George A Papakostas, Dimitris E Koulouriotis, Athanasios S Polydoros, and Vassilios D Tourassis. Towards hebbian learning of fuzzy cognitive maps in pattern classification problems. *Expert Systems with Applications*, 39(12):10620–10629, 2012.

Conferences & Workshops

[C4]   Jordi Spranger, Roxana Buzatoiu, Athanasios Polydoros, Lazaros Nalpantidis, and Evangelos Boukas. Human-machine interface for remote training of robot tasks. In *2018 IEEE International Conference on Imaging Systems and Techniques (IST)*, pages 1–5. IEEE, 2018.

[C5]   Athanasios S Polydoros, Evangelos Boukas, and Lazaros Nalpantidis.   Online multi-target learning of inverse dynamics models for computed-torque control of compliant manipulators. In *Intelligent Robots and Systems (IROS), 2017 IEEE/RSJ International Conference on*, pages 4716–4722. IEEE, 2017.

[C6]   Evangelos Boukas, Athanasios S Polydoros, Gianfranco Visentin, Lazaros Nalpantidis, and Antonios Gasteratos.   Global localization for future space exploration rovers.   In *International Conference on Computer Vision Systems*, pages 86–98. Springer, 2017.

[C7]   Athanasios S Polydoros and Lazaros Nalpantidis. A reservoir computing approach for learning forward dynamics of industrial manipulators. In *Intelligent Robots and Systems (IROS), 2016 IEEE/RSJ International Conference on*, pages 612–618. IEEE, 2016.

[C8]   Athanasios S Polydoros, Bjarne Grossmann, Francisco Rovida, Lazaros Nalpantidis, and Volker Kruger. Accurate and versatile automation of industrial kitting operations with SkiROS,.   In *17th Conference Towards Autonomous Robotic Systems (TAROS), (Sheffield, UK)*, 2016.

[C9]   Athanasios S Polydoros, Lazaros Nalpantidis, and Volker Kruger.   Real-time deep learning of robotic manipulator inverse dynamics. In *Intelligent Robots and Systems (IROS), 2015 IEEE/RSJ International Conference on*, pages 3442–3448. IEEE, 2015.

[C10] Athanasios S Polydoros, Lazaros Nalpantidis, and Volker Krüger. Advantages and limitations of reservoir computing on model learning for robot control. In *2nd International Workshop on Machine Learning for Planning and Control, IROS Hamburg*, 2015.

[C11] Athanasios Polydoros, Lazaros Nalpantidis, and Volker Krüger.   Towards an intelligent robotic manipulator for industrial object-placing tasks. In *International Workshop on Intelligent Robot Assistants*, 2014.

[C12] Athanasios S Polydoros, Lazaros Nalpantidis, and Volker Krüger. A roadmap towards intelligent and autonomous object manipulation for assembly tasks. In *International workshop on Autonomous Grasping and Manipulation, ICRA*, 2014.

[C13] Smith C Simon, Athanasios S Polydoros, and J M Herrmann. Internal models for self-organized robotic behavior. In *Seventh International Workshop on Guided Self-Organization*. University of Freiburg, Germany, 2014.

[C14] George A Papakostas, Athanasios S Polydoros, Dimitris E Koulouriotis, and Vasileios D Tourassis. Training fuzzy cognitive maps by using hebbian learning algorithms: a comparative study. In *Fuzzy Systems (FUZZ), 2011 IEEE International Conference on*, pages 851–858. IEEE, 2011.

Book Chapters

[B15] Francesco Rovida, Matthew Crosby, Dirk Holz, Athanasios S Polydoros, Bjarne Großmann, Ronald PA Petrick, and Volker Krüger. SkiROS—a skill-based robot control platform on top of ROS. In *Robot Operating System (ROS)*, pages 121–160. Springer, 2017.

[B16] GA Papakostas, AS Polydoros, DE Koulouriotis, and VD Tourassis. Evolutionary feature subset selection for pattern recognition applications. INTECH Open Access Publisher, 2011.

Theses

[T17] Athanasios S. Polydoros. *"Online Learning of Industrial Manipulators' Dynamics Models.* Ph.d. dissertation, 2017.

[T18] Athanasios S. Polydoros. *Effect of Internal Models on Homeokinetic Controlled Autonomous Robots, M.Sc. Thesis.* M.sc. thesis, 2013.

[T19] Athanasios S. Polydoros. *Learning Fuzzy Cognitive Maps by Using Hebbian Learning Algorithms in System Modeling and Pattern Recognition.* B.sc thesis.

Reviewer

Journals:

IEEE Robotics and Automation Letters (RAL)
Autonomous Robots (AURO)
Engineering Applications of Artificial Intelligence
Electronics Letters (IET)
Big Data

Conferences:

IEEE International Conference on Intelligent Robotics and Systems (IROS)
IEEE International Conference on Robotics and Automation (ICRA)

Professional Memberships

IEEE Member
Technical Chambers of Greece

Referees

Available on request