Pantelis Rafail Vlachas

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Birth: 28 October 1993

EDUCATION

CSE Lab - ETH Zürich, Zurich, Switzerland *February 2017 - ongoing*
Ph.D. in Machine Learning and Uncertainty Quantification
Supervised by Prof. Petros Koumoutsakos

ETH Zürich, Zurich, Switzerland *March 2016 - August 2016*
Master Thesis in Model Predictive Control and Embedded Optimization
Supervised by Rey Felix & Prof. John Lygeros
GPA: 6.0/6.0 (top 1%)

Technische Universität München, Munich, Germany *October 2014 - August 2016*
M. Sc. in Electrical Engineering & Computer Science
Concentration on Control Theory, Machine Learning & Robotics
Overall GPA: 1.0/1.0 (top 1%)

Technische Universität München, Munich, Germany *October 2011 - July 2014*
B. Sc. in Electrical Engineering & Computer Science
Bachelor Thesis, Grade: 1.0/1.0
Overall GPA: 1.3/1.0 (top 3%)

Dodonaia Private High School - Lyceum, Ioannina, Greece *September 2005 - June 2011*
High School GPA: 19,07/20 (top 1%)
Lyceum GPA: 19,02/20 (top 1%)
National Pan-Hellenic Exams GPA: 19.135/20.000 (top 1%)

EXPERIENCE

ETHZ, Automatic Control Lab (IfA) March 2016 - September 2016
Master Thesis *Zurich, Switzerland*

- Compared the alternating direction method of multipliers (ADMM) and the alternating minimization algorithm (AMA) with respect to paradigms from model predictive control (MPC) applications as well as randomly generated MPC problems.
- Reformulated the general MPC problem to facilitate application of the methods.
- Improved the convergence speed using acceleration, relaxation, scaling, and/or conditioning.

German Aerospace Center (DLR) September 2015 - February 2016
Research Internship *Oberpfaffenhofen, Germany*

- Worked on the development of an optimal braking controller for variable stiffness actuators with non-linear stiffness characteristic.
- Developed braking control and estimation schemes for rigid actuators in MATLAB/Simulink.
- Evaluated the performance and compared the proposed methods in simulation and experimentally with a DLR Lightweight Robot III.

TUM, Chair of Automatic Control October 2012 - September 2015
Research Projects *Munich, Germany*

- Analyzed the convergence of learning algorithms for dynamical systems.
- Analyzed an optimal control design for the swing-up of a double pendulum using motion primitives.

· Implemented an obstacle avoidance algorithm of a LWR robot with learning by demonstration.
· Modeled a NAO H25 robot in the single support phase using Autolev.

TUM, Chair of Electronic Design Automation April 2014 - March 2015
Research Assistant - Bachelor Thesis *Munich, Germany*

· Designed and implemented four constraint programming algorithms in C++ for verification of the power-down mode of analog circuits.
· Evaluated the performance and compared the proposed algorithms in industrial circuits in Cadence Virtuoso.
· Published and presented the results in the IEEE International Conference on Electronics, Circuits, and Systems (ICECS), 2015.

German Aerospace Center (DLR) March 2013 - April 2013
Internship *Oberpfaffenhofen, Germany*

· Developed a digital circuit for controlling color displays.
· Designed the printed circuit board (PCB) layout using CadSoft EAGLE software.
· Soldered the components in the PCB.

COMPETENCES

Operating Systems	Linux, Mac OS X, Microsoft Windows
Programming & Others	MATLAB/Simulink, C++ , Python, Latex, Microsoft Office, AutoLev, AutoCAD, Acado, Cadence, EAGLE, VHDL
Languages	Greek (Mother tonque), English (ETS TOEFL iBT 106/120), German TestDaF (TDN 4), French (Basic)

HONOURS AND AWARDS

◇ **Scholarship for Exchange Research Semester at ETH Zürich, 2016**
Awarded by the ETH Zürich

◇ **Scholarship Deutschlandstipendium at TUM, 2012 - 2016**
Germany's National Scholarship Program

◇ **National Student Competition in Physics, 2010**
4. Prize, Awarded by the Union of Greek Physicists

◇ **National Mathematics Olympiad Archimedes, 2006 - 2010**
Bronze Medal, Several Merits, Awarded by the Greek Mathematical Society

PUBLICATIONS

M. Zwerger, P. R. Vlachas, H. Graeb, *A Fast Analytical Approach for Static Power-Down Mode Analysis*, IEEE International Conference on Electronics, Circuits, and Systems (ICECS), 2015. [link]

PRESENTATIONS

IEEE International Conference on Electronics, Circuits, and Systems (ICECS), 2015. *A Fast Analytical Approach for Static Power-Down Mode Analysis.*

International Seminar on Signal Processing, TU München, TU Vienna, ETH Zürich, 2015. *QoS Feasibility for the MIMO Broadcast Channel.*

IfA Coffee Talk, ETH Zurich, 18. August 2016. *ADMM and AMA for MPC - A Comparison.*

WORKSHOPS

- Data-Driven Methods for Multi-Scale Physics and Complex Systems, Rome, 2017.

TUTORING

- Optimization methods, SS 2015
- Analysis III, WS 2015
- Control Systems I, SS 2014
- Advanced Control Laboratory, SS 2014
- Analysis II, SS 2014
- Higher Mathematics II, WS 2013

INTERESTS

- Track and Field (1500m - 5000m - 10000m - 3000m Steeplechase), 2 National Medals
- Running, Football, Music, Bouzouki

REFERENCES

Prof. Helmut Graeb
Institute for Electronic Design Automation, TUM
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Prof. Dr.-Ing. habil. Dirk Wollherr
Institute for Automatic Control, TUM
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Research Scientist Nico Mansfeld
Institute of Robotics and Mechatronics, DLR
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