

Alexandros Nikou, PhD

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SUMMARY : Experienced electrical engineer & computer scientist (PhD) in the fields of automatic control, machine learning, data science and robotics. Skilled in Python, C++, Matlab and SQL.

Education

- **KTH Royal Institute of Technology** Stockholm, Sweden
PhD in Electrical Engineering and Computer Science (240 ECTS) 5/2015 - 9/2019
 - Division of Decision and Control Systems
 - Research topic: Multi-agent systems, Optimization, Control design, Robotics, Formal methods, Machine learning, Data science
- **KTH Royal Institute of Technology** Stockholm, Sweden
Licentiate in Electrical Engineering and Computer Science (120 ECTS) 4/2015 - 6/2017
 - Licentiate thesis title: Cooperative Task Planning Control of Multi-Agent Systems Under Timed Temporal Specifications (PDF)
- **National Technical University of Athens (NTUA)** Athens, Greece
MSc in Automatic Control Systems and Robotics (120 ECTS) 10/2012 - 10/2014
 - MSc thesis title: Analysis, Modeling and Nonlinear Control of a Novel Aerial Manipulator (PDF)
 - 1st class (distinction), Ranking: 2nd out of 65 students
- **National Technical University of Athens (NTUA)** Athens, Greece
MEng in Electrical Engineering and Computer Science (300 ECTS) 10/2007 - 10/2012
 - MEng thesis title: Numerical Research On the Sequential Quadratic Programming (SQP) Optimization Algorithm (PDF)
 - Direction: Automatic control, Robotics, Communication systems, Computer networks

Working Experience

- **ABB Group** Stockholm, Sweden
Machine learning engineer 8/2018 - 9/2018
 - I was working in an project in collaboration with ABB industrial partners. Given data from a thrust-propeller ABB system the goal was to apply and implement machine learning and deep neural networks algorithms to estimate the model of the system and to perform data-driven control.
- **KTH, Division of Decision and Control Systems** Stockholm, Sweden
Research engineer 4/2015 - 9/2019
 - EU project “CO4ROBOTS : Achieving Complex Collaborative Missions via Decentralized Control and Coordination of Interacting Robots”. My work involves designing and implementing planning strategies for successful coordination and collaboration between robots in order to achieve high-level complex tasks by using Distributed Model Predictive Control. The project is in collaboration with Bosch Artificial Intelligence and PAL Robotics.
 - EU project “BUCOPHSYS : Bottom-Up hybrid CONTROL and Planning SYNthesis with application to multi-robot multi-human coordination”. My work involves designing and implementing in ROS and C++ novel frameworks for multi-robot planning.
 - EU project “AEROWORKS : Collaborative Aerial Robotic Workers”: I designed robust feedback control laws applied to aerial robots for manipulation tasks as well as formation control.

- **NTUA, Control Systems Lab** Athens, Greece
Research engineer 6/2013 - 1/2015
 - EU project “PANDORA : Persistent Autonomy through learNing, aDaptation, Observation and ReplAnning”. I developed a robust force-position control scheme for underwater robots in interaction with the environment.
 - Project “LUCAS : a natural Language instrUCted Aerial robotic aSSistant”. I designed, modeled and controlled an innovative autonomous aerial robot with grasping capabilities towards all directions.
- **NTUA, Division of Signals, Control and Robotics** Athens, Greece
Research engineer 3/2012 - 10/2012
 - My work involved numerical experiments with optimization algorithms in MATLAB.
- **National greek census** Athens, Greece
Technical staff 3/2011 - 8/2011
 - I participated in the National Census, gathering statistical data and personal information from a specific number of people in a suburb of Athens. I was also a technical employee in the final statistical process of the data. Through this position I had the opportunity to learn how to be efficient under pressure as well as manage my time efficiently and meet deadlines.
- **TELLAS Telecommunication** Athens, Greece
Internet technical support employee 9/2007 - 9/2008
 - I was responsible for technical support for internet issues of both home and business networks. This position helped me improve my interpersonal, communication and troubleshooting skills.
- **Self-employed** Athens, Greece
Computer hardware and software technician 9/2006 - 9/2012
 - I was conducting technical support operations regarding computer hardware and software.

IT Skills

- Programming and scripting languages:
 - Python, C, C++, MATLAB, Haskell, Assembly MIPS.
- Database tools:
 - SQL, PySpark.
- Software:
 - ROS, Mathematica, MS Office/Excel/Power point, MS Visio, Advanced design system (ADS), Autocad, Adobe premiere (Video Processing), L^AT_EX.

IT Certifications

I have obtained through DataCamp and Udemy the following on-line certificates:

1. Python programmer 2. C++ developer 3. Data scientist with python 4. Machine learning with python

Throughout these certificates, I learned all the necessary programming tools, techniques and algorithms required in data science as well as supervised/unsupervised/deep learning as well as C++ libraries. Moreover, I became familiar with the Python libraries *NumPy*, *Pandas*, *Scikit-Learn*, *TensorFlow* and *Keras* as well as data manipulation/visualization and estimation.

Languages

- English (fluent, C2 level)
- Swedish (intermediate, B1 level)
- Greek (native)

Teaching Experience

- **KTH, Division of Decision and Control Systems** Stockholm, Sweden
Teaching assistant 1/2016 - present
 - EL2450 - Hybrid and Embedded Control Systems and EL1000 - Automatic Control Course
- **National Technical University of Athens** Athens, Greece
Undergraduate private tutoring 9/2009 - 2/2015
 - I have tutored 20 undergraduate students on the undergraduate and postgraduate courses of Electrical Engineering university program. These were academic lecture process in order to support undergraduate students with their studies.

Awards, Scholarships and Honors

- **KTH, Division of Decision and Control Systems** Stockholm, Sweden
Awarded a PhD position among 120 candidates. 3/2015
- **BAGEIOS committee foundation** Athens, Greece
Undergraduate scholarship 9/2007 - 9/2012
 - I was awarded a five-year undergraduate scholarship by the BAGEIOS Committee due to my great academic performance which was the highest among the students from my place of origin.
- **National Technical University of Athens** Athens, Greece
University candidates exams 9/2006
 - Awarded one out of 230 positions to school of Electrical and Computer Engineering among approximately 98000 student candidates. Grade: 19.1/20.0
- **3rd High School of Haidari** Athens, Greece
High school honor 9/2000 - 9/2006
 - I was awarded six honorary diplomas (one per school year) from the greek ministry of education and the mayor of Dasos Haidariou, for excellence in my studies during the years of secondary education.
- **Hellenic Mathematical Society** Athens, Greece
Mathematical contest award 2/2006
 - I was awarded by the Hellenic Mathematical Society for my distinction in the greek mathematic Olympiad contest “Archimedes”.

Supervision

- **KTH, Department of Automatic Control** Stockholm, Sweden
Supervision of master thesis students 11/2015 - 8/2019
 - Yu Wang. Thesis: Cooperative Transportation of Mobile Manipulators with Collision Avoidance
 - Alexandros Filotheou. Thesis: Robust Decentralized Control of Cooperative Multi-Robot Systems
 - Sofie Andersson. Thesis: Automatic Control Design Synthesis under MITL Specifications
- **KTH, Department of Automatic Control** Stockholm, Sweden
Supervision of bachelor thesis students 1/2018 - 8/2019
 - Marcus Lindström, Jahangir Jazayeri. Thesis: Deep Reinforcement Learning in Distributed Optimization
- **KTH, Department of Automatic Control** Stockholm, Sweden
Project leader to E1 project 4/2016 - 4/2017
 - The project involved programming and controlling a Segway in Python.

Publications

I am the author of 10 journal papers, 20 peer-reviewed conference papers and 5 technical thesis. The aforementioned publications have been cited **210** times by other researchers according to Google scholar. For a complete list of publications see my personal website.