

George P. Kontoudis

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EDUCATION

PhD, Virginia Tech Bradley Department of Electrical and Computer Engineering Advisor: Daniel J. Stilwell Area of Focus: Signals, Systems & Controls GPA: 3.93/4.00	2018–present
MSc, Virginia Tech Department of Mechanical Engineering Advisor: Tomonari Furukawa Co-advisor: Kyriakos G. Vamvoudakis GPA: 4.00/4.00	2016–2018
Diploma (MSc), National Technical University of Athens School of Mechanical Engineering Advisor: Kostas J. Kyriakopoulos Co-advisor: Minas Liarokapis Grade: 7.76/10.00 (<i>top 20%</i>)	2012–2016
BSc, University of West Attica Department of Mechanical Engineering	2005–2010

RESEARCH EXPERIENCE

Graduate Research Assistant Center for Marine Autonomy & Robotics Virginia Tech	Aug 2018–present
Graduate Research Assistant Computational Multiphysics Systems Laboratory Virginia Tech	May 2017–Aug 2018
Member & Research Associate The OpenBionics Initiative	Sep 2014–present
Research Assistant Control Systems Laboratory National Technical University of Athens	Apr 2014–Mar 2016

TEACHING EXPERIENCE

Graduate Teaching Assistant Department of Mechanical Engineering, Virginia Tech	Aug 2016–May 2017
· Lectured 80 students in a senior level, control systems lab.	Fall 2016
· Guided 20 students in a series of 8 junior level, mechanical engineering labs.	Spring 2017

AWARDS & HONORS

NSF Student Travel Grant (WuWNet)	2019
2×Virginia Tech GSA Travel Fund Award (Humanoids, ICORR)	2019
Student Travel Award (ACC)	2019
NTUA Thomaideion Award	2016
Hackaday Prize, 2 nd place (among 900 projects)	2015

Robotdalen Innovation Award, 1st place
IEEE/RAS Student Travel Award (IROS)

2015
2015

PROFESSIONAL EXPERIENCE

Senior Mechanical Engineer

Heliix Inc., Athens, Greece

Mar 2016–Jun 2016

- Worked on the product design and development of a waste heat recovery device

Site Supervisor

Sychem S.A., Athens, Greece

Sep 2013–Aug 2015

- Provided guidance to industrial maintenance crew of 6 people for a desalination plant

Mechanical Engineer

Sychem S.A., Athens, Greece

Oct 2010–Sep 2013

- Monitored and commissioned desalination plants

Aircraft Maintenance Engineer Trainee

Olympic Aviation, Athens, Greece

May 2008–Jan 2010

- Performed engineering work of maintenance and modifications on aircrafts

PUBLICATIONS

Referred Journal Publications

- [J1] **George P. Kontoudis**, Kyriakos G. Vamvoudakis, “Kinodynamic Motion Planning with Continuous-Time Q-Learning: An Online, Model-Free, and Safe Navigation Framework,” *IEEE Transactions on Neural Networks and Learning Systems (TNNLS)*, 2019.
- [J2] **George P. Kontoudis**, Minas Liarokapis, Kyriakos G. Vamvoudakis, Tomonari Furukawa, “An Adaptive Actuation Mechanism for Anthropomorphic Robot Hands,” *Frontiers in Robotics and AI*, 2019.

Referred Conference Publications

- [C1] Gal Gorjup, **George P. Kontoudis**, Anany Dwivedi, Geng Gao, Saori Matsunaga, Toshisada Mariyama, Bruce MacDonald, and Minas Liarokapis “Combining Programming by Demonstration with Path Optimization and Local Replanning to Facilitate the Execution of Assembly Tasks,” *IEEE International Conference on Systems, Man and Cybernetics (SMC)*, Toronto, Canada, 2020.
- [C2] **George P. Kontoudis**, Zirui Xu, Kyriakos G. Vamvoudakis, “Online, Model-Free Motion Planning in Dynamic Environments: An Intermittent, Finite Horizon Approach with Continuous-Time Q-Learning,” *American Control Conference (ACC)*, Denver, USA, 2020.
- [C3] **George P. Kontoudis**, Daniel J. Stilwell, “A Comparison of Kriging and Cokriging for Estimation of Underwater Acoustic Communication Performance,” *ACM International Conference on Underwater Networks and Systems (WuWNet)*, Atlanta, USA, 2019.
- [C4] **George P. Kontoudis**, Minas Liarokapis, Kyriakos G. Vamvoudakis, “An Adaptive, Humanlike Robot Hand with Selective Interdigitation: Towards Robust Grasping and Dexterous, In-Hand Manipulation,” *IEEE-RAS International Conference on Humanoid Robots (Humanoids)*, Toronto, Canada, 2019.
- [C5] **George P. Kontoudis**, Minas Liarokapis, Kyriakos G. Vamvoudakis, “A Compliant, Underactuated Finger for Anthropomorphic Hands,” *IEEE/RAS-EMBS Inter. Conference on Rehabilitation Robotics (ICORR)*, Toronto, Canada, 2019.
- [C6] **George P. Kontoudis**, Kyriakos G. Vamvoudakis, “Robust Kinodynamic Motion Planning using Model-Free Game-Theoretic Learning,” *American Control Conference (ACC)*, Philadelphia, USA, 2019.
- [C7] Kyriakos D. Tsoukalas, **George P. Kontoudis**, Kyriakos G. Vamvoudakis, “Active-Bayesian Learning for Cooperation Connectivity in Dynamic Cyber-Physical-Human Systems,” *IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning (ADPRL)*, Honolulu, USA, 2017.

- [C8] **George P. Kontoudis**, Minas Liarokapis, Agisilaos G. Zisimatos, Christoforos I. Mavrogiannis, Kostas J. Kyriakopoulos, “Open-Source, Anthropomorphic, Underactuated Robot Hands with a Selectively Lockable Differential Mechanism: Towards Affordable Prostheses,” *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Hamburg, Germany, 2015.

Theses

- [T1] **George P. Kontoudis**, “Adaptive, Anthropomorphic Robot Hands for Grasping and In-Hand Manipulation,” *Master Thesis, Mechanical Engineering, Virginia Tech*, Blacksburg, Virginia, USA, December 2018.
- [T2] **George P. Kontoudis**, “Design and Development of an Underactuated, Anthropomorphic Robot Hand,” *Diploma Thesis, Mechanical Engineering, National Technical University of Athens*, Athens, Greece, March 2016. (in Greek)

Other Publications

- [O1] **George P. Kontoudis**, Minas Liarokapis, Agisilaos G. Zisimatos, Christoforos I. Mavrogiannis, Kostas J. Kyriakopoulos, “How to Create Affordable, Anthropomorphic, Light-Weight Prosthetic Hands,” *Control Systems Lab, National Technical University of Athens*, Athens, Greece, October 2015.
- [O2] Agisilaos G. Zisimatos, Minas Liarokapis, Christoforos I. Mavrogiannis, **George P. Kontoudis**, Kostas J. Kyriakopoulos, “How to Create Affordable, Modular, Light-Weight, Underactuated, Compliant Robot Hand,” *Control Systems Lab, National Technical University of Athens*, Athens, Greece, January 2015.

SERVICE ACTIVITIES

Reviewer, Journals

- | | |
|---|------------|
| · IEEE Transactions on Neural Networks and Learning Systems (TNNLS) | 2019, 2020 |
| · IEEE Transactions on Robotics (TRO) | 2020 |
| · IEEE Transactions on Automation Science and Engineering (TASE) | 2020 |
| · IEEE Transactions on Cybernetics (TCYB) | 2020 |
| · IEEE Control Systems Letters (LCSS) | 2019, 2020 |
| · IEEE Robotics and Automation Letters (RAL) | 2019 |
| · International Journal of Advanced Robotic Systems (IJARS) | 2015, 2016 |

Reviewer, Conferences

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|---|------------|
| · IEEE International Conference on Robotics and Automation (ICRA) | 2018–2020 |
| · IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) | 2018–2020 |
| · IEEE Conference on Decision and Control (CDC) | 2019, 2020 |
| · IEEE International Conference on Automation Science and Engineering (CASE) | 2019 |
| · IEEE-RAS International Conference on Humanoid Robots (Humanoids) | 2019 |
| · American Control Conference (ACC) | 2018 |
| · IEEE International Conference on Biomedical Robotics and Biomechatronics (BioRob) | 2018, 2020 |
| · Mediterranean Conference on Control and Automation (MED) | 2018 |

TALKS & PRESENTATIONS

- “Online, Model-Free Motion Planning in Dynamic Environments: An Intermittent, Finite Horizon Approach with Continuous-Time Q-Learning,” *American Control Conference (ACC)*, Denver, USA, 2020. **[Rapid-Interactive Presentation]**
- “A Comparison of Kriging and Cokriging for Estimation of Underwater Acoustic Communication Performance,” *ACM International Conference on Underwater Networks and Systems (WuWNet)*, Atlanta, USA, 2019. **[Oral Presentation]**
- “An Adaptive, Humanlike Robot Hand with Selective Interdigmation: Towards Robust Grasping and Dexterous, In-Hand Manipulation,” *Workshop on New Challenges in Humanoid Grasping and Manipulation in IEEE-RAS International Conference on Humanoid Robots (Humanoids)*, Toronto, Canada, 2019. **[Oral Presentation - Invited Talk]**
- “An Adaptive, Humanlike Robot Hand with Selective Interdigmation: Towards Robust Grasping and Dexterous, In-Hand Manipulation,” *IEEE-RAS International Conference on Humanoid Robots (Humanoids)*, Toronto, Canada, 2019. **[Poster Presentation]**

- “Robust Kinodynamic Motion Planning using Model-Free Game-Theoretic Learning,” *American Control Conference (ACC)*, Philadelphia, USA, 2019. [**Oral Presentation**]
- “A Compliant, Underactuated Finger for Anthropomorphic Hands,” *IEEE/RAS-EMBS International Conference on Rehabilitation Robotics (ICORR)*, Toronto, Canada, 2019. [**Poster Presentation**]
- “Adaptive, Anthropomorphic Robot Hands for Grasping and In-Hand Manipulation,” *Department of Mechanical Engineering, Virginia Tech*, Blacksburg, Virginia, USA, December 2018. [**Master’s Defense**]
- “Evaluation Strategies of Adaptive, Anthropomorphic Robot Hands for Dexterous In-Hand Manipulation: Early Results,” *National Institute of Standards and Technology (NIST)*, USA, 2018. [**Invited Talk**]
- “Open-Source, Anthropomorphic, Underactuated Robot Hands with a Selectively Lockable Differential Mechanism: Towards Affordable Prostheses,” *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Hamburg, Germany, 2015. [**Oral Presentation**]

MENTORING

Master’s Students

- Zirui Xu, Georgia Institute of Technology 2018–2020
 Advisor: Kyriakos G. Vamvoudakis
 Next position: PhD student at University of Maryland

SKILLS

Languages	English, Greek (native)
Operating Systems	Windows, Linux, ROS
Design & Simulation Software	Solidworks, AutoCAD, ANSYS
Programming	MATLAB, R, Python, Julia, C/C++, HTML/CSS, L ^A T _E X
Other Skills	3D printing, Laser cutting

MEMBERSHIPS & SOCIETIES

Memberships

- IEEE, Student Member 2015–present
- ASME, Student Member 2016–present
- SIAM, Student Member 2019–present

Societies

- IEEE, Robotics and Automation Society (RAS) 2015–present
- IEEE, Control Systems Society (CSS) 2017–present

RELEVANT GRADUATE COURSEWORK

Control	AOE5244: Optimization Techniques, AOE5984-SS: Cyber-Physical Systems & Distributed Control, AOE5774: Nonlinear Systems Theory, AOE6544: Linear Control Theory, ME6574: Adaptive Control Systems
Robotics	ECE5984-SS: Advanced Robot Motion Planning, ME5984-SS: Advanced Experimental Robotics, ME5524: Bayesian Robotics, ECE5984-SS: Autonomous Coordination, ME5984-SS: Motion Planning Analysis
Dynamics	AOE5204: Vehicle Dynamics & Control
Mathematics	MATH5414: Model Reduction of Dynamical Systems, MATH3324: Advanced Calculus
Others	STAT5544: Spatial Statistics, AOE5984: Scientific Machine Learning & Uncertainty Quantification ECE5644: Game Theory for Communication Networks