

# George P. Kontoudis

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## EDUCATION

<b>PhD, Virginia Tech, USA</b> Bradley Department of Electrical and Computer Engineering Advisor: Dr. Daniel Stilwell Area of Focus: Systems, Controls, and Signals Current GPA: 4.0	<i>Present</i>
<b>MSc, Virginia Tech, USA</b> Department of Mechanical Engineering Advisor: Dr. Tomonari Furukawa Co-advisor: Dr. Kyriakos G. Vamvoudakis GPA: 4.0	<i>2018</i>
<b>Diploma (MSc), National Technical University of Athens, Greece</b> School of Mechanical Engineering Advisor: Dr. Kostas J. Kyriakopoulos Co-advisor: Dr. Minas Liarokapis Grade: 7.76/10 ( <i>top 20%</i> )	<i>2016</i>
<b>BSc, University of West Attica, Greece</b> Department of Mechanical Engineering	<i>2010</i>

## RESEARCH EXPERIENCE

<b>Graduate Research Assistant</b> Center for Marine Autonomy and Robotics Virginia Tech, USA	<i>August 2018 - Present</i>
<b>Graduate Research Assistant</b> Computational Multiphysics Systems Laboratory Virginia Tech, USA	<i>May 2017 - August 2018</i>
<b>Member &amp; Research Associate</b> The OpenBionics Initiative	<i>September 2014 - Present</i>
<b>Research Assistant</b> Control Systems Laboratory National Technical University of Athens, Greece	<i>April 2014 - March 2016</i>

## TEACHING EXPERIENCE

<b>Graduate Teaching Assistant</b> Department of Mechanical Engineering, Virginia Tech, USA	<i>August 2016 - May 2017</i>
· Lectured 80 students in a senior level, control systems lab.	<i>Fall 2016</i>
· Guided 20 students in a series of 8 junior level, mechanical engineering labs.	<i>Spring 2017</i>

## AWARDS & HONORS

NSF Student Travel Award (WuWNet)	<i>USA 2019</i>
Virginia Tech GSA Travel Fund Award (ICORR)	<i>USA 2019</i>
Student Travel Award (ACC)	<i>USA 2019</i>
NTUA Thomaideion Award	<i>Greece 2016</i>
Hackaday Prize, 2 <sup>nd</sup> place (among 900 projects)	<i>USA 2015</i>

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

Sweden 2015  
Germany 2015

## PROFESSIONAL EXPERIENCE

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### Senior Mechanical Engineer

Heliix Inc., Athens, Greece

March 2016 - June 2016

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

### Site Supervisor

Sychem S.A., Athens, Greece

September 2013 - August 2015

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

### Mechanical Engineer

Sychem S.A., Athens, Greece

October 2010 - September 2013

- Monitored and commissioned desalination plants

### Aircraft Maintenance Engineer Trainee

Olympic Aviation, Athens, Greece

May 2008 - January 2010

- Performed engineering work of maintenance and modifications on aircrafts

## PUBLICATIONS

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### Referred Journal Publications

- [J1] **George P. Kontoudis**, Minas Liarokapis, Kyriakos G. Vamvoudakis, Tomonari Furukawa, "An Adaptive Actuation Mechanism for Anthropomorphic Robot Hands," *Frontiers in Robotics and AI*, 2019.
- [J2] **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. [Impact factor: 11.683] (early access)

### Referred Conference Publications

- [C1] **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. [Full-length, acceptance rate 38%]
- [C2] **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.
- [C3] **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.
- [C4] **George P. Kontoudis**, Kyriakos G. Vamvoudakis, "Robust Kinodynamic Motion Planning using Model-Free Game-Theoretic Learning," *American Control Conference (ACC)*, Philadelphia, USA, 2019.
- [C5] 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. [Invited submission]
- [C6] **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

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### Reviewer, Journals

- IEEE Transactions on Neural Networks and Learning Systems (TNNLS) 2019
- IEEE Control Systems Letters (L-CSS) 2019
- IEEE Robotics and Automation Letters (RA-L) 2019
- International Journal of Advanced Robotic Systems (IJARS) 2015, 2016

### Reviewer, Conferences

- IEEE International Conference on Robotics and Automation (ICRA) 2018-2020
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2018, 2019
- IEEE Conference on Decision and Control (CDC) 2019
- 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
- Mediterranean Conference on Control and Automation (MED) 2018

## TALKS & PRESENTATIONS

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- “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 Interdigitation: 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 Interdigitation: 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]**

## SKILLS

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<b>Languages</b>	English, Greek(native)
<b>Operating Systems</b>	Windows, Linux, ROS
<b>Design and Simulation Software</b>	Solidworks, AutoCAD, ANSYS, Slic3r, ProCAST, PSpice, Cura
<b>Programming</b>	MATLAB, R, Python, C/C++, HTML/CSS, L <sup>A</sup> T <sub>E</sub> X
<b>Other Skills</b>	3D printing, Laser cutting

## MEMBERSHIPS & SOCIETIES

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### Memberships

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|-------------------------|-----------------------|
| · IEEE - Student Member | <i>2015 - Present</i> |
| · ASME - Student Member | <i>2016 - Present</i> |

### Societies

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|------------------------------------------------|-----------------------|
| · IEEE - Robotics and Automation Society (RAS) | <i>2015 - Present</i> |
| · IEEE - Control Systems Society (CSS)         | <i>2017 - Present</i> |

## RELEVANT GRADUATE COURSEWORK

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<b>Control</b>	AOE5244-Optimization Techniques, AOE5984-SS: Cyber-Physical Systems & Distributed Control, AOE5774-Nonlinear Systems Theory, AOE6544-Linear Control Theory, ME6574-Adaptive Control Systems
<b>Robotics</b>	ME5984-SS: Advanced Experimental Robotics, ME5524-Bayesian Robotics, ME5984-SS: Motion Planning Analysis, ECE5984-SS: Advanced Robot Motion Planning
<b>Dynamics</b>	AOE5204-Vehicle Dynamics & Control
<b>Mathematics</b>	MATH5414-Model Reduction of Dynamical Systems, MATH3324-Advanced Calculus