

# STEFANOS NIKOLAIDIS

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## Education

- Ph.D., Robotics**, Carnegie Mellon University. **2017 (ABD)**  
Advisor: Siddhartha Srinivasa. GPA: 4.0/4.0.
- M.Sc., Aeronautics and Astronautics**, Massachusetts Institute of Technology. **2014**  
Advisor: Julie Shah. GPA: 5.0/5.0.
- M.Eng., Precision Engineering**, The University of Tokyo. **2009**  
Advisor: Tamio ARAI. (Grade: "Excellent").
- B.Sc., Electrical and Computer Engineering**, National Technical University of Athens. **2006**  
Advisor: Spyros Tzafestas. GPA: 9.18/10.

## Work Experience

- Visiting Researcher**, National University of Singapore, Department of Computer Science, PI : David Hsu. **2016**
- Research Specialist**, Massachusetts Institute of Technology, Computer Science and Artificial Intelligence Laboratory, PI : Julie Shah. **2014**
- Researcher**, Square-Enix Research and Development, Japan. **2009-2011**
- Visiting Researcher**, Takamishi Laboratory, Waseda University. **2008**
- Software Engineer**, Institute of Language and Speech Processing, Greece. **2006-2007**

## Awards

- Best Enabling Technology Paper Award**, HRI 2015. **2015**
- CMU Gordon Bell Fellowship**. **2015**
- Best Paper Award Nomination**, 44th International Symposium of Robotics (ISR 2013). **2013**
- Invited Talk at HRI Pioneers**. **2013**  
(2 out of 57 applicants were selected)
- MIT Dupont Fellowship**. **2012**
- MIT Marie-Vergotties Fellowship**. **2012**
- Onassis Foundation Scholarship**. **2011**
- Propondis Foundation Honorary Scholarship**. **2011**
- Third place in Japan-Open Robocup**, Four-legged league, Osaka. **2007**
- Japanese Government Scholarship**, Scholarship for graduate studies in Japan. **2007**

## Teaching

- Manipulation Algorithms**, Carnegie Mellon University. **2017**

Instructor (co-taught with Dr. Katharina Muelling).

**Dynamic Optimization**, Carnegie Mellon University. 2017  
TA for Prof. Chris Atkeson.

**Principles of Autonomy and Decision Making**, Massachusetts Institute of Technology. 2013  
TA for Prof. Julie Shah

## Mentoring

**Xuning Wang, Rosario Scalise, Shen Li, Shiyuan Chen, Reuben Aronson, Richard Goldstein, Shushman Choudhury**, Research Qualifier Committee, Carnegie Mellon University.

**Minae Kwon**, Robotics Institute Summer Scholaship, Carnegie Mellon University.

**Yu Xiang Zhu, Anton Kuznetsov**, Undergraduate Research Opportunities, Carnegie Mellon University.

**Premyszlav Lasota, Ramya Ramaksishnan**, M.Sc. Thesis, Massachusetts Institute of Technology. (Now PhD Candidates at MIT)

**Keren Gu, Julia Guo, Hrishikesh Joshi**, Undergraduate Research Opportunities Program, Massachusetts Institute of Technology.

## Service

**Workshop Organizer**: *Mathematical Models, Algorithms, and Human-Robot Interaction*, RSS 2017.

**Workshop Organizer**: *Planning for Human-Robot Interaction: Shared Autonomy and Collaborative Robotics*, RSS 2016.

**Reviewer**: IJRR, IEEE-TRO, AURO, IEE RA-L, RSS, HRI, ICRA, IROS, RO-MAN

**Program Committee Member**: HRI Pioneers, MIPC

**National Olympic Committee Volunteer**: Olympic Games, Athens 2004

## Media Coverage

**Human-Robot Cross-Training**: MIT News, Discovery News, New York Times, ACM Tech News, New Scientist, Inc.

**Learning Human Types from Demonstrations**: Harvard Business Review, KurzweilAI

**Automated Dining**: IEEE Spectrum, IEEE The Institute

## Demos

**Automated Dining**: I led the development of a robot enabled dining scenario in the Personal Robotics Lab. In April 2016, I presented the demo to Secretary Clinton.

**HERB Sorts Colored Blocks**: I contributed to the development of a demo, where HERB, our home exploring robotic butler, completes a YCB task of sorting colored blocks. We presented the demo to the Carnegie Science Center.

**Shared Autonomy Control with VR Interface**: I contributed to the development of a demo, where a remote operator performs manipulation tasks through a Virtual Reality interface. In July 2017, I presented the demo to the Chief of Naval Research Rear Adm. David Hahn.

## Languages

Greek (native), English (full professional), Japanese (professional working), French (limited working), German (elementary)

## Invited Talks

- Game-Theoretic Modeling of Human Adaptation in Human-Robot Collaboration**, RSS 2017 Workshop on Mathematical Models, Algorithms, and Human-Robot Interaction . 2017
- Mutual Adaptation in Human-Robot Collaboration**, Princeton University. 2017
- Mutual Adaptation in Human-Robot Collaboration**, University of Texas at Austin. 2017
- Mutual Adaptation in Human-Robot Collaboration**, Cornell University. 2017
- Mutual Adaptation in Human-Robot Collaboration**, Brown University. 2017
- Human-Robot Mutual Adaptation**, RSS 2016 Workshop on Planning for Human-Robot Interaction. 2016
- Human-Robot Cross-Training**, Northeastern University. 2013
- Human-Robot Cross-Training**, HRI Pioneers. 2013

## Publications

### Journals

- [J1] Stefanos Nikolaidis, David Hsu, and Siddhartha Srinivasa. Human-robot mutual adaptation in collaborative tasks: Models and experiments. *The International Journal of Robotics Research (IJRR)*, 2017.
- [J2] Stefanos Nikolaidis, Przemyslaw Lasota, Ramya Ramakrishnan, and Julie Shah. Improved human-robot team performance through cross-training, an approach inspired by human team training practices. *The International Journal of Robotics Research (IJRR)*, 2015.

### Conferences

- [C1] Stefanos Nikolaidis, Swaprava Nath, Ariel D Procaccia, and Siddhartha Srinivasa. Game-theoretic modeling of human adaptation in human-robot collaboration. In *Proceedings of the ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, 2017.
- [C2] Stefanos Nikolaidis, Yu Xiang Zhu, David Hsu, and Siddhartha Srinivasa. Human-robot mutual adaptation in shared autonomy. In *Proceedings of the ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, 2017.
- [C3] Stefanos Nikolaidis, Anton Kuznetsov, David Hsu, and Siddhartha Srinivasa. Formalizing human-robot mutual adaptation: A bounded memory model. In *Proceedings of the ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, 2016.
- [C4] Stefanos Nikolaidis, Anca Dragan, and Siddhartha Srinivasa. Viewpoint-based legibility optimization. In *Proceedings of the ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, 2016.
- [C5] Stefanos Nikolaidis, Ramya Ramakrishnan, Keren Gu, and Julie Shah. Efficient model learning

from joint-action demonstrations for human-robot collaborative tasks. In *Proceedings of the ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, 2015. **(best enabling technology award)**.

[C6] Stefanos Nikolaidis and Julie Shah. Human-robot cross-training: computational formulation, modeling and evaluation of a human team training strategy. In *Proceedings of the ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, 2013.

[C7] Ronald Wilcox, Stefanos Nikolaidis, and Julie Shah. Optimization of temporal dynamics for adaptive human-robot interaction in assembly manufacturing. *Robotics Science and Systems (RSS)*, 2012.

[C8] Stefanos Nikolaidis and Tamio Arai. Optimal arrangement of ceiling cameras for home service robots using genetic algorithms. In *The IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*, 2009.

[C9] Stefanos Nikolaidis, Ryuichi Ueda, Akinobu Hayashi, and Tamio Arai. Optimal camera placement considering mobile robot trajectory. In *IEEE International Conference on Robotics and Biomimetics (ROBIO)*, 2009.

[C10] Ryuichi Ueda, Stefanos Nikolaidis, Akinobu Hayashi, and Tamio Arai. Global pose estimation of multiple cameras with particle filters. In *Distributed Autonomous Robotic Systems (DARS)*. 2009.

[C11] Aggelos Gkiokas, Kostas Perifanos, and Stefanos Nikolaidis. Real-time detection and visualization of clarinet bad sounds. In *Proceedings of the International Conference on Digital Audio Effects (DAFx)*, 2008.

[C12] Prachya Kamol, Stefanos Nikolaidis, Ryuichi Ueda, and Tamio Arai. RFID based object localization system using ceiling cameras with particle filter. In *Future generation communication and networking (FGCN)*, 2007.

### Workshops

[W1] Min Chen, Stefanos Nikolaidis, Harold Soh, David Hsu, and Siddhartha Srinivasa. The role of trust in decision-making for human robot collaboration. In *Robotics Science and Systems (RSS), Workshop on Human-Centered Robotics*, 2017.

[W2] Stefanos Nikolaidis, Keren Gu, Ramya Ramakrishnan, and Julie Shah. Learning human types from demonstration. In *2014 AAAI Fall Symposium Series*, 2014.

[W3] Stefanos Nikolaidis, Przemyslaw Lasota, Gregory Rossano, Carlos Martinez, Thomas Fuhlbrigge, and Julie Shah. Human-robot collaboration in manufacturing: Quantitative evaluation of predictable, convergent joint action. In *International Symposium on Robotics (ISR)*, 2013. **(best paper award finalist)**.

[W4] Przemyslaw Lasota, Stefanos Nikolaidis, and Julie Shah. Developing an adaptive robotic assistant for close proximity human-robot collaboration in space. In *AIAA Infotech Aerospace Conference*, 2013.

[W5] Stefanos Nikolaidis and Julie Shah. Human-robot cross-training: computational formulation, modeling and evaluation of a human team training strategy. In *HRI Pioneers (International Conference on Human-Robot Interaction)*, 2011.

- [W6] Stefanos Nikolaidis and Julie Shah. Human-robot interactive planning using cross-training: A human team training approach. In *AIAA Infotech Aerospace Conference*. 2012.
- [W7] Stefanos Nikolaidis and Julie Shah. Human-robot teaming using shared mental models. In *Proceedings of the ACM/IEEE International Conference on Human-Robot Interaction (HRI), Workshop on Human-Agent-Robot Teamwork*, 2012.
- [W8] Ryuichi Ueda, Stefanos Nikolaidis, Akinobu Hayashi, and Tamio Arai. Pose estimation of multiple cameras with particle filters - evaluation on experimental data. In *Proceedings of the Annual Conference of the Robotics Society of Japan (RSJ)*, 2008. (in Japanese).
- [W9] Feng Duan, Stefanos Nikolaidis, Akinobu Hayashi, Jeffrey Tan, Ye Zhang, and Tamio Arai. Image-based operator monitoring system. In *Proceedings of the Annual Conference of the Robotics Society of Japan (RSJ)*, 2008. (in Japanese).
- [W10] Akinobu Hayashi, Stefanos Nikolaidis, Ryuichi Ueda, and Tamio Arai. Optimal pose planning for door opening task by mobile 7 dof manipulator. In *Proceedings of the Annual Conference of the Robotics Society of Japan (RSJ)*, 2008. (in Japanese).
- [W11] Feng Duan, Jeffrey Tan, Stefanos Nikolaidis, Ryu Kato, and Tamio Arai. Predict worker's intention through template-based gesture recognition method. In *The Japan Society for Precision Engineering Autumn Meeting (JSPE)*, 2008.
- [W12] Ryuichi Ueda, Stefanos Nikolaidis, Prachya Kamol, Akinobu Hayashi, and Tamio Arai. Pose estimation of multiple cameras with particle filters - evaluation on simulation. In *The Society of Instrument and Control Engineers (SICE)*, 2007. (in Japanese).
- [W13] Prachya Kamol, Stefanos Nikolaidis, Akinobu Hayashi, Tamio Arai, and Ryuichi Ueda. RFID - based object localization system using particle filter with ceiling cameras. In *Proceedings of the Annual Conference of the Robotics Society of Japan (RSJ)*, 2007.

### **Patents**

- [P1] Seth Cooper, Stefanos Nikolaidis, and Arun Mehta. Efficient example-based styling of motion databases. 2011.
- [P2] Joel Horne, Stefanos Nikolaidis, and Junko Asakura. Robust motion selection for physical biped character control. 2010.