

Andrew M. Wells

Education

- 2016–2021 **Ph.D. in Computer Science**, *Rice University*, advisor Dr. Lydia E. Kavraki.
- 2016–2019 **M.S. in Computer Science**, *Rice University*, advisor Dr. Lydia E. Kavraki.
- 2012–2016 **B.S. in Computer Science**, *Catholic University of America*, *Magna Cum Laude*.
- 2012–2016 **Ph.B. in Philosophy**, *Catholic University of America*, *Magna Cum Laude*.

Experience

- 2017–2021 **Space Technology Research Fellow**, NASA, Dr. Julia Badger.

As part of my fellowship, I work at NASA JSC over the summers. I apply my research in task-motion planning, multi-modal planning, multi-agent planning and formal synthesis to Robonaut 2 and Astrobee.

- 2016–2021 **Research Assistant**, *Rice University*, Dr. Lydia E. Kavraki.

Research in applications of Machine Learning to task-motion planning to improve scalability; finite horizon probabilistic synthesis and applying the same to robot manipulation; research in multi-robot planning and control as well as multi-robot task and motion planning; and using stochastic games to model human-robot collaboration.

- Summer 2016 **Google Summer of Code**, LLVM/Linux, Jan-Simon Moller.

Worked on the Clang static-analyzer for LLVM/Linux. I implemented checkers for the Linux Kernel. (Exact contributions can be found for user andrewmw94 at https://github.com/andrewmw94/llvm_clang_GSoC)

- 2013–2016 **Research Assistant**, *Catholic University of America*, Dr. Erion Plaku.

Research in motion planning for high-dimensional systems with nonlinear dynamics and in combining Linear Temporal Logic with Multi-Robot Planning. In both cases, discrete search is used to improve scalability of motion planning.

- Summer 2015 **NSF REU**, DIMACS, *Rutgers University*, Dr. Kostas Bekris.

Extended a proof of probabilistic near-optimality from PRM^* -style algorithms to tree-based planners. Research in motion planning for dynamic systems using shortest paths in different homotopic classes to guide the search.

- Summer 2014 **Google Summer of Code**, MLPACK, Dr. Ryan Curtin.

Implement structures and algorithms for nearest-neighbor searches. (Exact contributions can be found for user andrewmw94 at <https://github.com/mlpack/mlpack>)

- Summer 2013 **NSF REU**, *Florida International University*, Dr. Xin Sun.

Research in Software Defined Networking, specifically adding a field to a packet header so make administration more easy and efficient.

Skills

Languages: C, C++, Java, L^AT_EX, Python, Matlab, Coq, OCaml, Dafny

Frameworks: ROS, Linux, PRISM, LLVM, Z3, OMPL, Tensorflow, Docker, Git

Awards

2019 ICRA Best Paper in Cognitive Robotics

2017 NASA Space Technology Research Fellowship

2017 NSF Graduate Research Fellowship Program Honorable Mention

TAROS 2015 Best Student Paper Award.

CRA Outstanding Undergraduate Researcher. Honorable Mention 2016.

Best Poster Presentation award Florida International University Computer Science REU 2013.

Winner of CUA Math Contest Fall 2012 - Spring 2016

Publications

A. M. Wells, M. Lahijanian, L. E. Kavraki, and M. Y. Vardi, “LTLf Synthesis on Probabilistic Systems,” *Electronic Proceedings in Theoretical Computer Science*, vol. 326, pp. 166–181, Sep. 2020.

T. Pan, C. K. Verginis, A. M. Wells, D.V. Dimarogonas and L. E. Kavraki, “Augmenting Control Policies with Motion Planning for Robust and Safe Multi-robot Navigation,” in *IEEE Intl. Conf. on Intelligent Robots and Systems*, 2020. To appear.

Z. Kingston, A. M. Wells, M. Moll, and L. E. Kavraki, “Informing Multi-Modal Planning with Synergistic Discrete Leads,” in *IEEE Intl. Conf. on Robotics and Automation*, 2020, pp. 3199–3205.

Wells, Andrew M., Dantam, Neil T., Shrivastava, Anshumali and Kavraki, Lydia E. “Learning Feasibility for Task and Motion Planning in Tabletop Environments,” *IEEE Robotics and Automation Letters*, 2019. *IEEE Robotics and Automation Letters*, vol. 4, no. 2, pp. 285–292, Apr. 2019.

He, Keliang, Wells, Andrew M., Kavraki, Lydia E. and Vardi, Moshe. Y. “Efficient Symbolic Reactive Synthesis for Finite-Horizon Tasks,” in *IEEE Intl. Conf. on Robotics and Automation*, 2019. (**Best Paper in Cognitive Robotics**)

Wells, Andrew and Plaku, Erion. “Adaptive Sampling Based Motion Planning for Mobile Robots with Differential Constraints.” *Springer LNCS Towards Autonomous Robotic Systems*, vol. 9287, pp. 283–295 http://link.springer.com/chapter/10.1007%2F978-3-319-22416-9_32 (**Best Student Paper Award**)

O’Neil, Michael, Wells, Andrew and Sun, Xin. “Towards a novel and efficient packet identifier design for SDN” *HotSDN ‘14 Proceedings of the third workshop on Hot topics in software defined networking*, pp. 223–224. <http://dl.acm.org/citation.cfm?id=2620728.2620775>