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.
- Work at NASA JSC over the summers, collaborate during the year
- Apply research in task-motion planning and formal synthesis to Robonaut 2 and Astrobee (See [Kingston ICRA 2020])

2016–2021 **Research Assistant**, *Rice University*, Dr. Lydia E. Kavraki.
- Apply Machine Learning to task-motion planning to improve scalability (See [Wells RAL 2020])
- Develop finite probabilistic synthesis and applying the same to robot manipulation (See `https://github.com/andrewmw94/ltlf_prism` and [Wells EPTCS 2020])
- Mentor graduate student's research in multi-robot planning and control as well as multi-robot task-motion planning (See [Pan IROS 2020])
- Develop tool for stochastic games to model human-robot collaboration

Summer 2016 **Google Summer of Code**, *LLVM/Linux*, Jan-Simon Moller.
- Implemented checkers using the Clang static-analyzer for the Linux Kernel (See user andrewmw94 at `https://github.com/andrewmw94/llvm_clang_GSoC`)

2013–2016 **Research Assistant**, *Catholic University of America*, Dr. Erion Plaku.
- Use discrete leads to motion plan for high-dimensional systems with nonlinear dynamics (See [Wells TAROS 2015])

Summer 2015 **NSF REU**, *DIMACS, Rutgers University*, Dr. Kostas Bekris.
- Extended a proof of probabilistic near-optimality from PRM^* to tree-based planners
- Use shortest paths in different homotopic classes to guide kinodynamic motion planning

Summer 2014 **Google Summer of Code**, *MLPACK*, Dr. Ryan Curtin.
- Implement R-Trees and variants for nearest-neighbor searches (See user andrewmw94 at `https://github.com/mlpack/mlpack`)

Summer 2013 **NSF REU**, *Florida International University*, Dr. Xin Sun.
- Add a field to a packet header in OpenFlow to make administration of Software Defined Networks more easy and efficient (See [O'Neil HotSDN 2014])

Skills

Languages: C, C++, Java, LaTeX, 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`