

Kiril Solovey

CURRICULUM VITÆ

PERSONAL INFORMATION

Citizenship: Israeli
Address: Schreiber 18m, School of Computer Science, Tel Aviv University, Israel
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Research Interests: Robot motion planning, sampling-based algorithms, multi-robot motion planning, computational geometry

EDUCATION

2013 – present School of Computer Science, Tel-Aviv University, Israel
Ph.D. in Computer Science.
Dissertation Topic: “Multi-Robot Motion Planning: Theory and Practice”
Advisor: Dan Halperin

2010 – 2013 School of Computer Science, Tel-Aviv University, Israel
M.Sc. in Computer Science, **magna cum laude**.
Dissertation Topic: “ k -Color Multi-Robot Motion Planning”
Advisor: Dan Halperin

2007 – 2010 School of Computer Science, Tel-Aviv University, Israel
B.Sc. in Computer Science, **magna cum laude**.

TEACHING EXPERIENCE

2018 Teaching assistant, Algorithmic Robotics and Motion Planning, *Tel Aviv University* (TAU).

2012–present Teaching assistant, Computer Structure, TAU.

2013 Teaching assistant, Workshop in Robot Motion Planning, TAU.

2009–2012 Grader, Computer Structure, Algorithmic Robotics and Motion Planning, Programming for Engineering, TAU.

HONORS AND AWARDS

- 2018** RSS Pioneers travel grant
- 2018** **Fulbright Post-doctoral Scholar Award** (47,500 \$), *United States-Israel Educational Foundation (USIEF)*
- 2015-18** **Clore Scholars Programme** (87,000 \$), *Clore Israel Foundation*
- 2017** **Best paper award**, for “Scalable Asymptotically-Optimal Multi-Robot Motion Planning”, *International Symposium on Multi-Robot and Multi-Agent Systems*
- 2016** List of top 100 teaching assistants, *Tel Aviv University (TAU)*
- 2016** Excellence in teaching award, School of Computer Science, TAU
- 2015** Rector’s excellence in teaching award, TAU
- 2015** **Best student paper award**, and finalist for best paper, for “On the Hardness of Unlabeled Multi-Robot Motion Planning”, *Robotics: Science and Systems*
- 2014,15** Internship Grant, Ministry of Science, Technology, and Space, Israel
- 2015** Deutsch Prize, *School of Computer Science, TAU*
- 2011,13,14** Excellence Scholarship, *Selim and Rachel Benin Scholarship Fund.*
- 2014** Aharon and Ephraim Katzir Travel Grant of the *Batsheva de Rothschild Fund*
- 2014** Prof. Rahamimoff Travel Grant for Young Scientists of the *US-Israel Binational Science Foundation* (declined)
- 2012** Intel Award, *Intel, Israel*
- 2011** Excellence Scholarship in Memory of Brucker Haim, *Faculty of Exact Sciences, TAU*
- 2010** Yearly Stipend for Promising M.Sc. Students, *School of Computer Science, TAU*
- 2010** Dean’s Honor List, *Faculty of Exact Sciences, TAU*
- 2009** Excellence Award for B.Sc. students, *School of Computer Science, TAU*

PUBLICATIONS

JOURNAL PAPERS

- Aviel Atias, **Kiril Solovey**, Oren Salzman, and Dan Halperin, “Effective Metrics for Multi-Robot Motion-Planning.” Special issue (**invited**), *International Journal of Robotics Research*, 2018.
- **Kiril Solovey** and Dan Halperin, “On the Hardness of Unlabeled Multi-Robot Motion Planning.” Special issue (**invited**), *International Journal of Robotics Research*, 35(14): 1750-1759, 2016.
- Oren Salzman, **Kiril Solovey** and Dan Halperin, “Motion Planning for Multi-Link Robots by Implicit Configuration-Space Tiling.” *IEEE Robotics and Automation Letters*, 1(2): 760-767, 2016.
- **Kiril Solovey***, Oren Salzman* and Dan Halperin (* equal contribution), “Finding a Needle in an Exponential Haystack: Discrete RRT for Exploration of Implicit Roadmaps in Multi-Robot Motion Planning.” Special issue (**invited**), *International Journal of Robotics Research*, 35(5): 501-513, 2016.

- Aviv Adler, Mark de Berg, Dan Halperin and **Kiril Solovey** (alphabetical order),
“Efficient Multi-Robot Motion Planning for Unlabeled Discs in Simple Polygons.”
Special issue (**invited**), *Transactions on Automation Science and Engineering*, 12(4): 1309-1317, 2015.
- **Kiril Solovey** and Dan Halperin,
“ k -Color Multi-Robot Motion Planning.”
Special issue (**invited**), *International Journal of Robotics Research*, 33(1): 82-97, 2014.

BOOK CHAPTERS

- Dan Halperin, Lydia Kavraki and **Kiril Solovey** (alphabetical order),
“Robotics”, in the *Handbook of Discrete and Computational Geometry*, Eds. Jacob E. Goodman, Joseph O’Rourke, and Csaba D. Toth, CRC Press LLC, to appear, 2016.

PEER-REVIEWED CONFERENCE PROCEEDINGS

- **Kiril Solovey** and Michal Kleinbort,
“The Critical Radius in Sampling-based Motion Planning.”
To appear in *Robotics: Science and Systems*, Carnegie Mellon University, PA, USA, 2018.
- Andrew Dobson, **Kiril Solovey**, Rahul Shome, Dan Halperin, and Kostas E. Bekris,
“Scalable Asymptotically-Optimal Multi-Robot Motion Planning.”
In *International Symposium on Multi-Robot and Multi-Agent Systems*, **best paper award**, 2017.
- **Kiril Solovey** and Dan Halperin,
“Efficient sampling-based bottleneck pathfinding over cost maps.”
In *International Conference on Intelligent Robots and Systems*, Vancouver, BC, Canada, 2017.
- Aviel Atias, **Kiril Solovey** and Dan Halperin,
“Effective Metrics for Multi-Robot Motion-Planning.”
In *Robotics: Science and Systems*, MIT, MA, USA, 2017. **Invited** to a special issue of *International Journal of Robotics Research*.
- **Kiril Solovey** and Dan Halperin,
“Asymptotically-Optimal Bottleneck Pathfinding with Applications to Fréchet-Type Optimization.”
In *European Symposium on Algorithms*, 76:1-76:16, Aarhus, Denmark, 2016.
- **Kiril Solovey**, Oren Salzman and Dan Halperin,
“New Perspective on Sampling-Based Motion Planning via Random Geometric Graphs.”
In *Robotics: Science and Systems*, University of Michigan, MI, USA, 2016.
- **Kiril Solovey**, Jingjin Yu, Or Zamir and Dan Halperin,
“Motion Planning for Unlabeled Discs with Optimality Guarantees.”
In *Robotics: Science and Systems*, Sapienza University of Rome, Italy, 2015.

- **Kiril Solovey** and Dan Halperin,
“On the Hardness of Unlabeled Multi-Robot Motion Planning.”
In *Robotics: Science and Systems*, **finalist for best paper, and winner of best student paper**, Sapienza University of Rome, Italy, 2015. Also in *International Symposium on Computational Geometry, Young Researchers Forum*, Eindhoven, The Netherlands, 2015.
- Aviv Adler, Mark de Berg, Dan Halperin and **Kiril Solovey** (alphabetical order),
“Efficient Multi-Robot Motion Planning for Unlabeled Discs in Simple Polygons.”
In *Workshop on Algorithmic Foundations of Robotics*, p 1-17, Istanbul, Turkey, 2014. Also in *European Workshop on Computational Geometry*, Ein Gedi, Israel, 2014.
- **Kiril Solovey***, Oren Salzman* and Dan Halperin (* equal contribution),
“Finding a Needle in an Exponential Haystack: Discrete RRT for Exploration of Implicit Roadmaps in Multi-Robot Motion Planning.”
In *Workshop on Algorithmic Foundations of Robotics*, p 591-607, Istanbul, Turkey, 2014.
- **Kiril Solovey** and Dan Halperin,
“ k -Color Multi-Robot Motion Planning.”
In *Workshop on Algorithmic Foundations of Robotics*, p 191-207, Cambridge, MA, USA, 2012.

DISSERTATIONS

- **Kiril Solovey**,
“ k -Color Multi-Robot Motion Planning.”
Master’s thesis, *Tel Aviv University*, February 2013, Advisor: Dan Halperin.

MANUSCRIPTS UNDER REVIEW

- **Kiril Solovey**, Oren Salzman and Dan Halperin,
“New Perspective on Sampling-Based Motion Planning via Random Geometric Graphs.”
Special issue (**invited**), *International Journal of Robotics Research*, 2016.

RESEARCH VISITS

- 2017** Microsoft Research, Theory Group, led by Yuval Peres, Redmond, WA, USA (two weeks).
- 2016** IEEE RAS Summer School on Multi-Robot Systems, National University of Singapore.
- 2015** Workshop on Geometric Problems on Sensor Networks and Robots, IBM Research, Yorktown Heights, NY, USA.
- 2014** Kavraki Lab, led by Lydia Kavraki, Rice University, Houston, TX, USA (three weeks).
- 2014** PRACSYS Group, led by Kostas Bekris, Rutgers University, Piscataway, NJ, USA (one week).

TALKS AND PRESENTATIONS

CONFERENCE AND WORKSHOP TALKS

- Presented “Efficient sampling-based bottleneck pathfinding over cost maps”
International Conference on Intelligent Robots and Systems, Vancouver, BC, Canada, September 2017.
- Gave a talk titled: “Applications of Random Geometric Graphs in Robot Motion Planning.”
Workshop on Random Geometric Graphs and their Applications in Complex Networks, Banff, Alberta, Canada, November 2016.
- Presented “Asymptotically-Optimal Bottleneck Pathfinding with Applications to Fréchet-Type Optimization.”
European Symposium on Algorithms, Aarhus, Denmark, August 2016.
- Presented “New Perspective on Sampling-Based Motion Planning via Random Geometric Graphs.” *Robotics: Science and Systems*, Ann Arbor, MI, USA, June 2016.
- Presented “On the Hardness of Unlabeled Multi-Robot Motion Planning.”
Robotics: Science and Systems, Rome, Italy, July 2015.
- Presented “Motion Planning for Unlabeled Discs with Optimality Guarantees.”
Robotics: Science and Systems, Rome, Italy, July 2015.
- Presented “On the Hardness of Unlabeled Multi-Robot Motion Planning.”
International Symposium on Computational Geometry, Young Researchers Forum, Eindhoven, The Netherlands, June 2015.
- Presented “Efficient Multi-Robot Motion Planning for Unlabeled Discs in Simple Polygons.”
Workshop on Algorithmic Foundations of Robotics, Istanbul, Turkey, August 2014.
- Presented “Finding a Needle in an Exponential Haystack: Discrete RRT for Exploration of Implicit Roadmaps in Multi-Robot Motion Planning.”
Workshop on Algorithmic Foundations of Robotics, Istanbul, Turkey, August 2014.
- Presented “Efficient Multi-Robot Motion Planning for Unlabeled Discs in Simple Polygons.”
European Workshop on Computational Geometry, Ein Gedi, Israel, March 2014.
- Presented “ k -Color Multi-Robot Motion Planning.”
Israeli Conference on Robotics, Tel Aviv, Israel, November 2013.
- Gave a talk titled: “Pebbles, Manifolds and Multi-Robot Motion Planning .”
Computational Geometry Learning Research Workshop, Berlin, Germany, December 2012.
- Presented “ k -Color Multi-Robot Motion Planning.”
Workshop on Algorithmic Foundations of Robotics, Cambridge, MA, USA, June 2012.

INVITED TALKS

- Gave a talk titled: “The critical radius in sampling-based motion planning”
Carnegie Mellon University, Robotics Institute, Foundations of Robotics Seminar, Pittsburgh, PA, USA, October, 2017.
- Gave a talk titled: “The critical radius in sampling-based motion planning”
Stanford University, Department of Aeronautics and Astronautics, Autonomous Systems Laboratory, Stanford, CA, USA, October, 2017.
- Gave a talk titled: “The critical radius in sampling-based motion planning”
University of British Columbia, School of Computer Science, Vancouver, BC, Canada, September, 2017.
- Gave a talk titled: “Introduction to Sampling-Based Robot Motion Planning.”
Microsoft Research, Theory Group, Redmond, WA, USA, April 2017.
- Gave a talk titled: “Recent Progress in Multi-Robot Motion Planning.”
Courses “Introduction to Robotics” and “Multi-Robot Systems”, Computer Science Department, Bar Ilan University, Ramat Gan, Israel, April 2015.
- Gave a talk titled: “Recent Progress in Multi-Robot Motion Planning.”
Group Seminar at Kavraki Lab, Rice University, Houston, TX, USA, September 2014.
- Gave a talk titled: “Recent Progress in Multi-Robot Motion Planning.”
Group Seminar at PRACSYS Group, Rutgers University, Piscataway, NJ, USA, September 2014.

COMMUNITY SERVICE

CONFERENCE REVIEWER

Robotics: Science and Systems; IEEE/RSJ International Conference on Intelligent Robots and Systems; IEEE International Conference on Robotics and Automation; International Symposium on Computational Geometry; International Workshop on the Algorithmic Foundations of Robotics; European Symposium on Algorithms; International Colloquium on Automata, Languages and Programming.

JOURNAL REVIEWER

IEEE Transactions on Automation Science and Engineering; IEEE Robotics and Automation Letters; International Journal of Robotics Research; Journal of Computational Geometry; IEEE Transactions on Industrial Informatics; Artificial Intelligence Journal.

EXTRACURRICULAR ACTIVITIES

- 2008–present** Maintained a personal website with study materials for Computer Science students.
- 2008–2009** Mentor for freshman students, School of Computer Science.
- 2009** Tutor for children in primary school, Perach Program.

MILITARY SERVICE

- 2004–2007** Full mandatory army service, Human Resources Branch, Israeli Defence Force.