

Hang Ma

Curriculum Vitæ

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EDUCATION

- 2014– **Ph.D. Computer Science**, *University of Southern California*, Los Angeles, CA, United States.
Advisor: Sven Koenig.
- 2012–2014 **M.Sc. Computer Science**, *McGill University*, Montreal, QC, Canada.
Advisor: Joelle Pineau.
- 2010–2012 **B.Sc. Computing Science (First Class with Distinction)**, *Simon Fraser University*, Burnaby, BC, Canada.
Ranked 1st in the Faculty. Graduated on the President’s and Dean’s Honour Rolls.
- 2008–2012 **B.Eng. Computer Science and Technology**, *Zhejiang University*, Hangzhou, Zhejiang, China.
Excellent Student Award. Outstanding Student Leader Award.

RESEARCH INTERESTS

Artificial intelligence, machine learning and robotics. Applications of probabilistic methods and other topics related to graphs, combinatorial optimization, and algorithms.

PUBLICATIONS

Journals and Magazines

- 2017 [J3] **Hang Ma**, Wolfgang Hönig, Liron Cohen, Tansel Uras, Hong Xu, T. K. Satish Kumar, Nora Ayanian, and Sven Koenig. “Overview: A Hierarchical Framework for Plan Generation and Execution in Multi-Robot Systems”. *IEEE Intelligent Systems*. 2017. Accepted.
- [J2] Wolfgang Hönig, T. K. Satish Kumar, **Hang Ma**, Liron Cohen, Hong Xu, Sven Koenig, and Nora Ayanian. “Path Finding for Multi-Robot Systems with Kinematic Constraints in Occluded Environments”. *Journal of Artificial Intelligence Research (JAIR)*. 2017. Accepted.
- [J1] **Hang Ma** and Sven Koenig. “AI Buzzword Explained: Multi-Agent Path Finding (MAPF)”. *AI Matters* 3.3. 2017, pp. 15–19.

Conferences

- 2017 [C9] **Hang Ma**, T. K. Satish Kumar, and Sven Koenig. “Multi-Agent Path Finding with Delay Probabilities”. *AAAI Conference on Artificial Intelligence (AAAI)*. 2017, pp. 3605–3612. Acceptance Rate: $638/2590 = 24.63\%$.
- [C8] **Hang Ma**, Jiaoyang Li, T. K. Satish Kumar, and Sven Koenig. “Lifelong Multi-Agent Path Finding for Online Pickup and Delivery Tasks”. *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*. 2017. Acceptance Rate: $155/595 = 26.05\%$.
- [C7] **Hang Ma**, Jingxing Yang, Liron Cohen, T. K. Satish Kumar, and Sven Koenig. “Feasibility Study: Moving Non-Homogeneous Teams in Congested Video Game Environments [Demonstration]”. *AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE)*. 2017.
- [C6] Wolfgang Hönig, T. K. Satish Kumar, Liron Cohen, **Hang Ma**, Hong Xu, Nora Ayanian, and Sven Koenig. “Summary: Multi-Agent Path Finding with Kinematic Constraints”. *International Joint Conference on Artificial Intelligence (IJCAI), Sister Conference Best Paper Track*. 2017, pp. 4869–4873.

- 2016 [C5] **Hang Ma**, Craig Tovey, Guni Sharon, T. K. Satish Kumar, and Sven Koenig. “Multi-Agent Path Finding with Payload Transfers and the Package-Exchange Robot-Routing Problem”. *AAAI Conference on Artificial Intelligence (AAAI)*. 2016, pp. 3166–3173. Acceptance Rate: 549/2132 = 25.75%.
- [C4] **Hang Ma** and Sven Koenig. “Optimal Target Assignment and Path Finding for Teams of Agents”. *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*. 2016, pp. 1144–1152. Acceptance Rate: 137/550 = 24.91%.
- [C3] Wolfgang Hönig, T. K. Satish Kumar, Liron Cohen, **Hang Ma**, Hong Xu, Nora Ayanian, and Sven Koenig. “Multi-Agent Path Finding with Kinematic Constraints”. *International Conference on Automated Planning and Scheduling (ICAPS)*. 2016, pp. 477–485. Acceptance Rate: 65/184 = 35.33%. This paper won the **Outstanding Paper Award in the Robotics Track** of ICAPS 2016.
- [C2] Wolfgang Hönig, T. K. Satish Kumar, **Hang Ma**, Nora Ayanian, and Sven Koenig. “Formation Change for Robot Groups in Occluded Environments”. *IEEE/RSJ International Conference on Intelligent Robots and System (IROS)*. 2016, pp. 4836–4842. Acceptance Rate: 832/1719 = 48.40%.
- 2015 [C1] **Hang Ma** and Joelle Pineau. “Information Gathering and Reward Exploitation of Subgoals for POMDPs”. *AAAI Conference on Artificial Intelligence (AAAI)*. 2015, pp. 3320–3326. Acceptance Rate: 531/1991 = 26.67%.
- [Workshops and Symposia](#)
- 2016 [W5] **Hang Ma**, Sven Koenig, Nora Ayanian, Liron Cohen, Wolfgang Hönig, T. K. Satish Kumar, Tansel Uras, Hong Xu, C. Tovey, and G. Sharon. “Overview: Generalizations of Multi-Agent Path Finding to Real-World Scenarios”. *IJCAI-16 Workshop on Multi-Agent Path Finding (WOMPF)*. 2016.
- [W4] **Hang Ma**, Craig Tovey, Guni Sharon, T. K. Satish Kumar, and Sven Koenig. “Multi-Agent Path Finding with Payload Transfers and the Package-Exchange Robot-Routing Problem [Abstract]”. *International Symposium on Combinatorial Search (SoCS)*. 2016, p. 149.
- [W3] **Hang Ma** and Sven Koenig. “Optimal Target Assignment and Path Finding for Teams of Agents [Abstract]”. *International Symposium on Combinatorial Search (SoCS)*. 2016, p. 151.
- [W2] Robert Morris, Corina Pasareanu, Kasper Luckow, Waqar Malik, **Hang Ma**, T. K. Satish Kumar, and Sven Koenig. “Planning, Scheduling and Monitoring for Airport Surface Operations”. *AAAI-16 Workshop on Planning for Hybrid Systems (PlanHS)*. 2016.
- [W1] Wolfgang Hönig, T. K. Satish Kumar, Liron Cohen, **Hang Ma**, Sven Koenig, and Nora Ayanian. “Path Planning with Kinematic Constraints for Robot Groups”. *Southern California Robotics Symposium (SCR)*. 2016.

HONORS AND AWARDS

- 2016, 2017 2× AAMAS Student Scholarship, *AAMAS*
- 2016 Outstanding Paper Award in the Robotics Track, *ICAPS*
- 2016 GSG Travel Grant, *University of Southern California*
- 2016 PhD Fellowships Travel/Research Award, *University of Southern California*
- 2014–2019 Annenberg Graduate Fellowship, *University of Southern California*
- 2013, 2014 2× Graduate Scholarship, *McGill University*
- 2013 Differential Fee Waiver, *McGill University*
- 2012 2× Open Scholarship, *Simon Fraser University*
- 2011–2012 3× Alumni Scholarship, *Simon Fraser University*
- 2010 Entrance Scholarship, *Simon Fraser University*
- 2009, 2010 2× Scholarship for Outstanding Merits, *Zhejiang University*
- 2009, 2010 2× Scholarship for Outstanding Students, *Zhejiang University*
- 2009, 2010 2× Excellent Student Award, *Zhejiang University*

2009 Outstanding Student Leader Award, *Zhejiang University*

ACADEMIC ACTIVITIES AND EXPERIENCE

Talks and Presentations

Conference Presentations.

- 05/11/2017 “Lifelong Multi-Agent Path Finding for Online Pickup and Delivery Tasks”, *AAMAS*.
- 02/06/2017 “Multi-Agent Path Finding with Delay Probabilities”, *AAAI*.
- 05/12/2016 “Optimal Target Assignment and Path Finding for Teams of Agents”, *AAMAS*.
- 02/14/2016 “Multi-Agent Path Finding with Payload Transfers and the Package-Exchange Robot-Routing Problem”, *AAAI*.
- 01/27/2015 “Information Gathering and Reward Exploitation of Subgoals for POMDPs”, *AAAI*.

Invited Talks and Presentations.

- 06/08/2016 “Generalizations of Multi-Agent Path Finding to Real-World Scenarios”, *School of Data and Computer Science, Sun Yat-Sen University*.
- 04/13/2016 “Optimal Target Assignment and Path Finding for Teams of Agents”, *U.S. Army Research Lab West Open House*.
- 10/30/2015 “POMDP Planning and Its Applications for Optimizing Building Energy”, *Civil Engineering Department, University of Southern California*.
- 02/13/2014 “Information Gathering and Reward Exploitation of Subgoals for POMDPs”, *Graduate Seminar Series, School of Computer Science, McGill University*.

Service to the Research Community

Executive Position.

- 2017– Information Officer (Appointed) of the *ACM Special Interest Group on Artificial Intelligence (SIGAI)*

Journal Reviewer.

- 2017 *Artificial Intelligence Journal (AIJ)*

Conference and Workshop Reviewer.

- 2016, 2017 *AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE)*
- 2017 *IEEE Conference on Computational Intelligence and Games (CIG)*
- 2017 *International Workshop on Optimisation in Multi-Agent Systems (OptMAS)*
- 2016, 2017 *International Conference on Automated Planning and Scheduling (ICAPS)*
- 2017 *AAAI-17 Workshop on Knowledge-Based Techniques for Problem Solving and Reasoning (KnowProS)*
- 2016 *International Workshop on the Algorithmic Foundations of Robotics (WAFR)*
- 2016 *International Symposium on Combinatorial Search (SoCS)*

Conference Volunteer.

- 2016, 2017 *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*

Service to the University

- 2017– Advisor of the USC’s Chapter of *AAAI, University of Southern California*.

Teaching

Teaching Assistant, *McGill University*.

- Winter 2014 Information Structures, (*COMP-610, 17 students*)
- Winter 2014 Algorithms and Data Structures, (*COMP-252, 43 students*)
- Fall 2013 Theory of Computation, (*COMP-330A, 77 students*)
- Fall 2013 Foundations of Computing, (*COMP-202, 668 students*)
- Fall 2012 Theory of Computation, (*COMP-330A, 97 students*)

Research Supervision and Student Mentoring

Research Project Supervisor, University of Southern California.

- Summer 2017 Jingxing Yang, *Undergraduate Student in Computer Science at USC, Summer Research Project.*
- Summer 2016 Jiaoyang Li, *Undergraduate Student in Automation at Tsinghua University, USC-Tsinghua Summer Experience Program.*
- Summer 2016 James Drain, *Undergraduate Student in Mathematics at Dartmouth College, Viterbi Summer Undergraduate Research Experience (SURE) Program.*
- Summer 2016 Zhi Wang, *Undergraduate Student in Computer Science at USC, Summer Research Project.*
- Summer 2016 Zhaowei Xu, *Undergraduate Student in Computer Science at USC, Summer Research Project.*
- Spring 2015 Maxwell Weiner, *Undergraduate Student in Computer Science at USC, Directed Research Project.*

Academic Conference Mentor.

- 02/2017 Aishwarya Reganti, *Undergraduate Student in Electronics and Communication Engineering at Indian Institute of Information Technology, Sri City, Conference Mentoring for the ACM-W Scholarship Program, AAAI.*

INDUSTRIAL EXPERIENCE

- 06/2016–**Research Intern**, U.S. Army Research Laboratory West, Playa Vista, CA, United States.
- 08/2016
 - Robot Planning.
 - Deformable Haptic Surfaces.
- 05/2011–**Automated Test Associate**, SV&V JDE Tools Team, BlackBerry Ltd (formerly Research in Motion Ltd), Waterloo, ON, Canada.
- 12/2011
 - Developed test cases for Java APIs for BlackBerry devices and executed automation test runs.
 - Developed software applications for BlackBerry Playbook based on Playbook Webworks platform with HTML5 and JQuery.