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Yu ("Tony") Zhang

Research Interests

Robotics	Distributed Robot Systems, Human-robot Teaming, Human-robot Interaction
Artificial Intelligence	Multi-agent Systems, Human-aware Planning, Multi-agent Planning, Automated Planning and Scheduling

Education

2009–2012 **Doctor of Philosophy**, *Dept. of EECS, The University of Tennessee*, Knoxville (UTK), *GPA – 4.00/4.00*.
The University of Tennessee Chancellor's Award for Extraordinary Professional Promise

2007–2009 **Masters of Science**, *Dept. of EECS, The University of Tennessee*, Knoxville (UTK), *GPA – 3.96/4.00*.

2002–2006 **Bachelor of Engineering**, *School of Software Engineering, Huazhong University of Science and Technology (HUST)*, Wuhan, P.R.China, *GPA – 87.55/100*.

Dissertation

Dissertation	*Coalition Formation and Execution in Multi-robot Tasks* Dept. of EECS, UTK
Advisor	Prof. Lynne E. Parker
Description	This dissertation introduces the first general architecture to achieve coalition level autonomy for tightly coupled multi-robot tasks, which is a prerequisite for teams of heterogeneous robots to operate flexibly in dynamic environments.

Research and Work Experience

2015–Present **Research Assistant Professor**, Dept. of Computer Science and Engineering (CSE), Arizona State University (ASU).

2013–2015 **Postdoctoral Research Scholar**, *Yochan Research Group*, Dept. of Computer Science and Engineering (CSE), Arizona State University (ASU).
Research on various topics on achieving natural and efficient human-robot teaming.

2012–2013 **Member of Technical Staff**, *CMC*, Riverbed Technology.
Software development for Central Management Console to manage WAN optimization devices.

2008–2012 **Research Assistant**, *Distributed Intelligence Lab.*, Dept. of EECS, UTK.
Research on forming and executing coalitions for teams of heterogeneous robots.

2007–2008 **Teaching Assistant**, Dept. of EECS, UTK.

2006–2007 **Software Engineer**, *BCM*, Infosys Technologies Co. Ltd., Shanghai, China.

2005–2006 **Software Engineer Intern**, *HTDM*, Infosys Technologies Ltd., Mysore & Banglore, India.
One of the 96 interns selected from 17 topmost universities in China.

Recent Honors and Awards

2014-2015 Postdoctoral Travel Grant

2014 Travel Award for Doctoral Consortium Mentor, International Conference on Automated Planning and Scheduling (ICAPS)

2012 **The University of Tennessee Chancellor's Citation Award for Extraordinary Professional Promise**

2012 NSF Travel Awards for International Conference on Robotics and Automation (ICRA)

2011 **The University of Tennessee Graduate Student Award, Fellowship**

2006 Undergraduate Excellent Thesis Award (score $\geq$ 90 out of 100)

2003–2006 Undergraduate Academic Award (top 10%)

Journals and Rigorously Reviewed Conference Publications

(Google Scholar Citation as of 05/03/2016: Citations 135, h-index 7, i10-index 5)

Journal Publications

2013 **Y. Zhang** and L. E. Parker, *IQ-ASyMTRe: Forming Executable Coalitions for Tightly-Coupled Multi-robot Tasks*, IEEE Transactions on Robotics, 29(2): 400-416.
Ranking: 1 out of 21 in Robotics based on JCR 2013.

2013 **Y. Zhang** and L. E. Parker, *Considering Inter-Task Resource Constraints in Task Allocation*, Journal of Autonomous Agents and Multi-Agent Systems, vol. 26, pp. 389-419.

Conference Publications

2016 **Y. Zhang**, S. Sreedharan and S. Kambhampati, *A Formal Analysis of Required Cooperation in Multi-agent Planning*, in International Conference on Automated Planning and Scheduling (ICAPS).

2016 T. Chakraborti, Kartik Talamadupula, **Y. Zhang*** and S. Kambhampati, *A Formal Framework for Studying Interaction in Human-Robot Societies*, in AAAI 2016 Workshop on Symbiotic Cognitive Systems.

2016 T. Chakraborti, **Y. Zhang*** and S. Kambhampati, *Planning with Stochastic Resource Profiles: An Application to Human-Robot Co-habitation*, in International Conference on Autonomous Agents and Multiagent Systems (AAMAS).

2015 **Y. Zhang**, V. Narayanan and S. Kambhampati, *A Human Factors Analysis of Proactive Assistance in Human-robot Teaming*, in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).

2015 T. Chakraborti, G. Briggs, K. Talamadupula, **Y. Zhang***, M. Scheutz , D. Smith and S. Kambhampati, *Planning for Serendipity*, to appear in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).

2015 **Y. Zhang**, S. Sreedharan and S. Kambhampati, *Capability Models and Their Applications in Planning*, International Conference on Autonomous Agents and Multiagent Systems (AAMAS).

2015 K. Kim, J. Campbel, W. Duong, **Y. Zhang*** and G. Fainekos, *DisCoF+: Asynchronous DisCoF with Flexible Decoupling for Cooperative Pathfinding in Distributed Systems*, IEEE International Conference on Automation Science and Engineering (CASE).

2015 T. Chakraborti, **Y. Zhang*** and S. Kambhampati, *Planning with Stochastic Resource Profiles: An Application to Human-Robot Co-habitation*, International Conference on Automated Planning and Scheduling (ICAPS), PlanRob Workshop.

2015 V. Narayanan, **Y. Zhang***, N. Mendoza and S. Kambhampati, *Automated Planning for Peer-to-peer Teaming and its Evaluation in Remote Human-Robot Interaction*, ACM/IEEE International Conference on Human Robot Interaction (HRI), Extended Abstract.

2014 **Y. Zhang**, K. Kim and G. Fainekos, *DisCoF: Cooperative Pathfinding in Distributed Systems with Limited Sensing and Communication Range*, International Symposium on Distributed Autonomous Robotic Systems (DARS).

2014 **Y. Zhang** and S. Kambhampati, *A Formal Analysis of Required Cooperation in Multi-agent Planning*, International Conference on Automated Planning and Scheduling (ICAPS), DMAP Workshop.

2014 **Y. Zhang**, L. E. Parker and S. Kambhampati, *Coalition Coordination for Tightly Coupled Multirobot Tasks with Sensor Constraints*, IEEE International Conference on Robotics and Automation (ICRA).

2013 **Y. Zhang** and L. E. Parker, *Multi-Robot Task Scheduling*, IEEE International Conference on Robotics and Automation (ICRA).

2012 **Y. Zhang** and L. E. Parker, *Task Allocation with Executable Coalitions in Multirobot Tasks*, IEEE International Conference on Robotics and Automation (ICRA).

2011 **Y. Zhang** and L. E. Parker, *Solution Space Reasoning to Improve IQ-ASyMTRe in Tightly-Coupled Multirobot Tasks*, IEEE International Conference on Robotics and Automation (ICRA).

2010 **Y. Zhang** and L. E. Parker, *IQ-ASyMTRe: Synthesizing Coalition Formation and Execution for Tightly-Coupled Multirobot Tasks*, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).

2010 **Y. Zhang** and L. E. Parker, *A General Information Quality Based Approach for Satisfying Sensor Constraints in Multirobot Tasks*, IEEE International Conference on Robotics and Automation (ICRA).

∗ **Papers as a mentor**.

Submitted Papers and Technical Reports

Journal Submissions

2015 T. Chakraborti, S. Kambhampati**, Y. Zhang***, *Planning for Effective Human-Robot Cohabitation*, Submitted to Journal of Autonomous Agents and Multi-agent Systems (JAAMAS).

2015 **Y. Zhang** and L. E. Parker, *FLOW: Information Flow-based Coalition Execution for Tightly Coupled Multirobot Tasks*, Under revision to International Journal of Robotics Research (IJRR).

Conference Submissions

2015 **Y. Zhang**, H. Zhuo and S. Kambhampati, *Plan Explainability and Predictability for Cobots*, under conference submission.

2015 J. He, H. Zhuo and **Y. Zhang**, *Word Representations Based Heterogeneous Collaborative Filtering*, under conference submission.

Technical Reports

2014 V. Narayanan, **Y. Zhang***, N. Mendoza and S. Kambhampati, *Plan or not: Remote Human-robot Teaming with Incomplete Task Information*, http://arxiv.org/abs/1412.2824.

2014 **Y. Zhang** and S. Kambhampati, *Learning of Agent Capability Models with Applications in Multi-agent Planning*, http://arxiv.org/abs/1411.1112.

2014 **Y. Zhang** and S. Kambhampati, *A Formal Analysis of Required Cooperation in Multi-agent Planning*, http://arxiv.org/abs/1404.5643.

∗ **Papers as a mentor**.

Grant Writing

2015 Proactively Ensuring Safety In Human-Aware Planning, *FLI*, PI: Kambhampati, Senior Personnel: **Yu Zhang**.

2015 Human Modeling for Planning to Achieve Natural Human-Robot Teaming, *NSF-NRI*, PI: Kambhampati, Co-PI: Baral, Senior Personnel: **Yu Zhang**.

2015 Research Area 10.3.1 Integrated Intelligence: Long-Term Continual Planning for Remote Human-Robot Teaming in Open Worlds, *ARO*, PI: Kambhampati, for undergraduate research (Daniel DSouza and Jake Merdich), **awarded**.

2015 Instrumentation for Research on Planning for Human-Robot Teaming in Open Worlds, *ONR*, PI: Kambhampati, Senior Personnel: **Yu Zhang**, $282,500 (7/29/15 - 7/31/16), **awarded**.

2015 RADAR: A Framework for Human-in-the-Loop Planning and Data-Based Decision-Support, *ONR*, PI: Kambhampati, $596,799 (1/1/15 - 12/31/17), **awarded**.

2015 Video-based Activity Recognition through Tight Integration of Visual Reasoning and Plan Recognition, *ONR*, PI: Baoxin Li. Co-PI: Kambhampati, $753,553 (5/1/2015 -4/30/2018), **awarded**.

2014 Instrumentation for Research on Planning for Human-Robot Teaming in Open Worlds, *ONR*, PI: Kambhampati, Senior Personnel: **Yu Zhang**, $112,864 (7/29/14 - 7/31/15), **awarded**.

Teaching Experience & Invited Talks

2015 **Panelist**, *Faculty Talk Series*, Dept. of CSE, ASU.
Presentation on Current Research Challenges.

2014 **Guest Lecturer**, *CSE 574, Planning/Learning Methods AI*, Dept. of CSE, ASU.
Lecturing on general planning methods for robots.

2011 **Guest Lecturer**, *COSC 494/529, Autonomous Mobile Robotics*, EECS, UTK.
Lecturing on obstacle avoidance and multi-robot path planning.

2007-2008 **Teaching Assistant**, *CS100, CS140, CS581*, EECS, UTK.

Student Mentoring

PhD, *Anagha Kulkarni (with Prof. Kambhampati), Tathagata Chakraborti (with Prof. Kambhampati), Kangjin Kim (with Prof. Fainekos).*

Masters, *Vignesh Narayanan (**Co-chair**, with Prof. Kambhampati), Sarath Sreedharan (with Prof. Kambhampati), Joe Campbell (with Prof. Fainekos).*

Undergraduate, *Daniel DSouza (ASU), Jake Merdich (WPI), Nathaniel Mendoza (ASU), Wyatt Tyree (ASU).*

Academic Service (PC Member and Reviewer)

Program Committee (PC) Member

2015, 2016 **Senior PC Member**, *International Joint Conference on Artificial Intelligence.*

2016 **PC Member**, *ACM/SIGAPP Symposium on Applied Computing.*

2014-2015 **PC Member**, *AAAI Conference on Artificial Intelligence.*

Reviewer

Artificial Intelligence Journal (AIJ).

Autonomous Robots (AURO).

IEEE Intelligent Systems (IEEE IS).

IEEE Transactions on Mobile Computing (IEEE TMC).

Journal of Intelligent and Robotic Systems.

IEEE Robotics and Automation Letters (RA-L).

IEEE International Conference on Robotics and Automation (ICRA).

IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).