

YANG SONG

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SUMMARY Developed advanced planning algorithms for mobile robots. Familiar with motion planning, robot dynamics and control. Proficient in robotics programming on Linux platforms using C++, Java, and Python, with third-party libraries (ROS). Experienced with mobile robot platforms: Pioneer, Turtlebot, etc.

EDUCATION **University of South Carolina**, Columbia, SC
Ph.D. Candidate, [Computer Science](#) Dec. 2015
University of New Mexico, Albuquerque, NM
M.S., [Electrical Engineering](#) Dec. 2009
China University of Geosciences, Wuhan, Hubei
B.S., [Electrical Engineering](#) June 2007

RESEARCH EXPERIENCE **South Carolina Autonomous Robotics Research (SCARR) Lab**, USC
Decentralized Formation Algorithm for Multi-Robot Systems Aug. 2014 – Present
- Proposed a provably-correct decentralized multi-robot formation algorithm
- Developed ROS-based software simulations with C++, Python and Bash
- Designed and built a GUI with the GTK+ and the Boost libraries

SCARR Lab, USC

Distributed Formation Algorithm for Multi-Robot Systems Aug. 2013 – May 2014
- Innovated a distributed task-assignment-based formation algorithm for multi-robot systems
- Implemented the algorithm and simulated experiments with C++
- Supported by the National Science Foundation (NSF) grant

SCARR Lab, USC

Planning Algorithm under Uncertainty Aug. 2010 – May 2011
- Promoted a geometric algorithm for robot planning under uncertainty
- Accomplished the algorithm and simulations using C++
- Achieved the same level of performance as using the approach that computed the high-fidelity information states, but with a small fraction of computational cost
- Supported by the NSF grant

Multi-Agent, Robotics, Hybrid, and Embedded Systems (MARHES) Lab, UNM

Multi-Robot Control Algorithm Aug. 2009
- Implemented a cyclic pursuit algorithm for nonholonomic vehicles with MATLAB/C++
- Simulated algorithms with Player/Gazebo
- Conducted experiments with Pioneer robots

HONORS & AWARDS Member of Upsilon Pi Epsilon
NSF Student Travel Grant Award May 2014
Code-A-Thon Winner (2 out of 12 teams) Feb. 2014

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- LANGUAGE & TOOLS** C/C++, Python, Ruby, Java, HTML/CSS, JavaScript, \LaTeX
ROS, Git, CMake, MATLAB, OpenCV, Bootstrap, Boost
- TEACHING** **University of South Carolina**, Columbia, SC
- EXPERIENCE** General Application Programming June 2012 – May 2014
- Taught web front-end interface design using HTML/CSS/JavaScript
Introduction to Computer Architecture Jan. 2012 – May 2012
- Taught computer architecture and MIPS programming
Algorithmic Design I Aug. 2010 – May 2011
- Instructed problem-solving patterns, algorithmic design, and Java programming
- PUBLICATIONS** **Y. Song** and J. M. O’Kane, “Decentralized formation of arbitrary multi-robot lattices”, ICRA 2014.
Y. Song and J. M. O’Kane, “Comparison of constrained geometric approximation strategies for planar information states”, ICRA 2012.
D. Miklic, S. Bogdan, R. Fierro, **Y. Song**, “A grid-based approach to formation reconfiguration for a class of robots with non-holonomic constraints”, European Journal of Control, 2012.