Yang Song

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Education

University of South Carolina, Columbia, SC
Ph.D. Candidate, Computer Engineering — 2010–2015

University of New Mexico, Albuquerque, NM
M.S., Electrical Engineering — 2008–2009

China University of Geosciences, Wuhan, Hubei
B.S., Electrical Engineering — 2003–2007

Research Experience

South Carolina Autonomous Robotics Research Lab, USC
Distributed Formation Algorithm for Multi-Robot Systems — 2013–present
- Developed a distributed multi-robot lattice formation algorithm.
- ROS-based software development with C++ and Python.
- GUI development with the GTK+ and the Boost libraries.
- Supported by the National Science Foundation (NSF) grant.

Planning Algorithm under Uncertainty — 2010-2011
- Developed a geometric algorithm for robot planning under uncertainty.
- Software development with C++.
- Experimental data collection and visualization with Perl and Gnuplot.
- Supported by the NSF grant.

Multi-Agent, Hybrid and Embedded Systems Lab, UNM
Multi-Robot Formation Control Algorithm — 2008-2009
- Implemented a nonlinear formation control algorithm with MATLAB and C++.
- Supported by the NSF and the DOE-URPR (University Research Program in Robotics) grants.

Honors & Awards

NSF Student Travel Grant Award. — 2014
Code-A-Thon Winner (2 out of 12 teams). — Feb. 2014
Web Application Development: Shopping for Groceries Economically
- Team work: Web application design (MVC pattern) to provide users the optimal shopping solutions.
- My contribution: Web interface development with PHP and Bootstrap to show items dynamically from the database.
- Supported by the Boeing Company.

Language & Tools

C/C++, Python, Ruby, Java, HTML/CSS, JavaScript, LaTeX
ROS, Git, CMake, Matlab, OpenCV, Bootstrap, Boost

Teaching Experience

University of South Carolina, Columbia, SC
Lecturer Instructor — 2012-2014
CSCE102 General Application Programming — summer2012 – spring 2014

- Teaching web front-end interface design using HTML/CSS/JavaScript.

CSCE212 Introduction to Computer Architecture — SPRING 2012

- Teaching computer architecture and MIPS programming.

Teaching Assistant — 2010–2011

CSCE145 Algorithmic Design I — FALL 2010, SPRING 2011

- Teaching 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.