Name: **Zhiyong Wang**
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Education

Sep. 2003 – Jul. 2007 **Northeastern University, Shenyang, China**
Bachelor of Engineering degree in Automation.

Sep. 2007 – Jun. 2010 **Tongji University, Shanghai, China**
Master of Engineering degree in Control Theory and Control Engineering.

Oct. 2010 – present **Delft University of Technology, Delft, The Netherlands**
PhD researcher

Research Interests Crisis Management; Artificial Intelligence; Agent technology; Navigation, Spatial data management systems Intelligent Algorithms; Operations Research; Geographic Information System

Experience

Sep. 2006- Oct. 2006 **Design of Electronic oven Temperature Control System based on Fuzzy Logic Control**

- Used PLC as a slave computer to accomplish the detection, data-collection and control of the controlled objects, and implemented the supervision of the controlled objects and slave computers in a master computer.
- Achieved the communication of master and slave computers through RS232 serial interface.
- Embedded fuzzy logic controller into the application program of KingView by combining Matlab and VB.

Nov. 2006- Jun. 2007 **Design and Simulation of an Arc Furnace Electrode Control System based on Model-free Adaptive Control**

- Analyzed the nonlinearity and arc length disturbance of single-phase electrode regulator system of arc furnace and built the simulation model in Matlab/Simulink.
- Designed a MFAC-PID controller to enhance the robustness and anti-jamming capability of the control system.

Sep. 2007- Dec. 2007 **Modeling and Dynamic Simulation of Cooling Water Systems of Shanghai Synchrotron Radiation Facility**

- Implemented the mathematical model of plate heat exchangers in Matlab/Simulink.
- Used Matlab/Simulink to simulate cooling water systems with traditional PID control scheme.
- Designed a fuzzy logic controller for sub-systems of linear accelerator to control the temperature of cooling water with high accuracy.

Dec. 2007- Sep.2008 **Research on Network Control Systems and Network Congestion Control Model of BACnet**

- Described the network loaded identity as a fuzzy finite state machine (FFSM) model.
- Proposed a new congestion control algorithm based on traditional Random Early Detection (RED) mechanism and the FFSM restriction.
- Simulated the FuSM model and the proposed algorithm using Matlab/Simulink and Network Simulator2(NS2) to demonstrate the effectiveness of the our approach.

Sep. 2008- Jun.2010 **Study on Transportation Model of Large-scale Emergency Relief Commodities and Vehicle Routing Problem (Project of National Natural Science of Foundation of China)**

- Established a non-cooperative game model for the resource allocation in a multi-emergency scenario.
- Designed an improved ant colony optimization algorithm to calculate Nash equilibrium of the game.
- Developed an integrated multi-objective model for determining the optimal rescuing paths after earthquake and a hybrid algorithm to obtain the Pareto solutions

Oct. 2010-Jun.2011 **Study on Decision Making in Crisis Management**

Jun. 2011-present **Research on navigation for first responders**

Awards

- Departmental Scholarship, Northeastern University, 2003-2007
- Scholarship Class A, Tongji University, Jun. 2007, Jun. 2008
- 3rd place of the 5th National Graduate Mathematical Contest in Modeling, Dec. 2008

Publications

- Zhiyong Wang, Xu Han, Weisheng Xu, Jijun Yang, "Solving Nash Equilibrium based on Improved Ant Colony Algorithm," Computer Engineering, (Chinese core journal),2010,36(14).166-168
- Zhiyong Wang, Jijun Yang, Weisheng Xu, Jiazhen Peng, "A Game Theoretic Approach for Resource Allocation based on Ant Colony Optimization in Emergency Management," in *Proc. IEEE International Conference on Information Engineering and Computer Science*, (ICIECS2009), vol.01, pp.147-150, Dec. 2009.
- Jie Zhang, Zhiyong Wang, Weisheng Xu, Dan Xiong, "The modal and solution of rescue path selection in emergency," Application Research of Computers, (Chinese core journal),2011,28(4).1311-1314
- Jie Zhang, Zhiyong Wang, Weisheng Xu, Jijun Yang, "Scheduling model and solution of relief resources for emergencies, (Chinese core journal), 2011,47(31).220-223
- Wang, Z., & Zlatanova, S. (2013). Taxonomy of navigation for first responders. In Progress in Location-Based Services (pp. 297-315). Springer Berlin Heidelberg.
- Wang, Z., & Zlatanova, S. (2013). An A*-based search approach for navigation among moving obstacles. In Intelligent Systems for Crisis Management (pp. 17-30). Springer Berlin Heidelberg.
- Wang, Z., & Zlatanova, S. (2013, November). Multi-agent Infrastructure Assisting Navigation for First Responders. In Proceedings of the Sixth ACM SIGSPATIAL International Workshop on Computational Transportation Science (p. 1-6). ACM.
- Wang, Z., Zlatanova, S., Moreno, A., van Oosterom, P., and Toro, C. (2014). A data model for route planning in the case of forest fires. Computers & Geosciences, 68:1–10
- Wang, Z. and Zlatanova, S. (2015). Multi-agent based path planning for first responders among moving obstacles. Computers, Environment and Urban Systems. Accepted
- Wang, Z. and Zlatanova, S. and Steenbruggen J. (2015). Multi-agent based path planning for first responders among moving obstacles. International Journal of Geographical Information Science. under review
- Wang, Z., Zlatanova, S., and van Oosterom, P. (2015). Path planning for first responders among uncertain moving obstacles. manuscript under preparation

MSc thesis topic

Modeling and Solution of the Allocation of Large-scale Emergency Relief Commodities

- Established a non-cooperative game model for the resource scheduling in emergency management.
- Designed an improved ant colony optimization algorithm to obtain Nash equilibrium of the game.
- Developed a multi-objective model for determining the optimal rescuing paths after earthquake.
- Proposed a genetic hybrid algorithm to obtain the Pareto solutions
- Incorporated the algorithm with other learning techniques to find multiple Nash equilibriums.

PhD project topic

Path planning for first responders in the presence of moving obstacles

Skills

- Computer Skills: C/C++, Java, JavaScript, HTML, XML, Matlab/Simulink and MS Office