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. (2014). Multi-agent based path planning for first responders among moving obstacles. Computers, Environment and Urban Systems. under review
- Wang, Z., Zlatanova, S., and van Oosterom, P. (2015). Path planning for first responders among uncertain moving obstacles. International Journal of Geographical Information Science. 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