

Jin Guo

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Research Interests

Software Engineering, Software Traceability, Requirements Satisfaction Analysis, Natural Language Processing, Deep Learning

Education

- 05/2017(Expected) **University of Notre Dame**, Notre Dame, USA
Ph.D. Candidate in Computer Science and Engineering
Advisor: Dr. Jane Cleland Huang
Dissertation: Semantically Enhanced Software Traceability
Committee: Collin McMillan, David Chiang, Jane Hayes (University of Kentucky)
- 06/2009 **Xian Jiaotong University**, Xi'an, China
M.S. in Information and Communication Engineering
- 06/2006 **Xian Jiaotong University**, Xi'an, China
B.S. in Information Engineering

Employment Experience

- 07/2016 - Present **Research Assistant**, University of Notre Dame, Notre Dame, USA
- *Semantically Enhanced Software Traceability Using Deep Learning Techniques*: designed a tracing network architecture that utilized Word Embedding and Recurrent Neural Network (RNN) to extract and compare semantic information from software artifacts for the purpose of software trace link generation.
- 01/2013 - 06/2016 **Research Assistant**, DePaul University, Chicago, USA
- *Domain Knowledge Mining*: designed and implemented a knowledge mining approach that leveraged trace links in software intensive systems to guide the process of extracting domain facts for supporting software engineering tasks.
 - *Intelligent Domain-Specific Traceability*: designed and implemented solutions for accurate trace links creation between software artifacts and generated the underlying rationales explaining those links utilizing natural language processing and knowledge representation techniques.
- 06/2009 - 07/2011 **Researcher**, Communication Technology Lab, Fuji Xerox, Yokohama, Japan
- *SkyDesk collaboration service*: designed and implemented image processing algorithms to extract and correct business card and whiteboard regions from images with complex backgrounds.
 - *Image comparison*: designed and implemented a fuzzy image comparing algorithm for the purpose of printer software testing.

10/2007 - 07/2008 **Visiting Research Fellow**, Communication Technology Lab, Fuji Xerox, Nakai, Japan

- *Sensing UI*: participated in designing and implementing a novel human-computer interface based on 3D tracking technologies and took charge of the image processing module.

Teaching/Mentoring Experience

Guest Lecturer	Coordinated series of debates on <i>Ethics in Drone Use</i> CSE-40773: Software Projects with Drones, University of Notre Dame. (Fall, 2016)
Guest Lecturer	Lectured on <i>Design Patterns</i> and <i>JavaFX</i> tool, Organized Lab Activities SE350: Object-Oriented Software Development, DePaul University. (Spring, 2016)
Invited Speaker	<i>Ontology Learning for Software-Intensive Projects</i> CSC 480: Artificial Intelligence, DePaul University. (Spring, 2016)
Invited Speaker	<i>Towards an Intelligent Domain-Specific Traceability Solution</i> CSC 395: Research Colloquium, DePaul University. (Fall, 2014)
Project Mentor	Managed and mentored two graduate students who served as research assistants on software engineering research projects, DePaul University. (2013-2014)
Invited Speaker	<i>The Domain-Specific Expert Traceability System</i> CSC 395: Research Colloquium, DePaul University. (Fall, 2013)
Co-Instructor	Lectured on <i>Image Processing and Pattern Recognition</i> Internal Tutorial, Fuji Xerox. (Fall, 2009)

Publication

Journal Articles	Guo, J. , Gibiec, M., and Cleland-Huang, J. "Tackling the term-mismatch problem in automated trace retrieval". In: <i>Empirical Software Engineering</i> (2016), pp. 1–40. DOI: 10.1007/s10664-016-9479-8
Conference	Guo, J. , Cheng, J., and Cleland-Huang, J. "Semantically Enhanced Software Traceability Using Deep Learning Techniques". Accepted to: the 38th International Conference on Software Engineering, ICSE 2017 Guo, J. , Rahimi, M., Cleland-Huang, J., Rasin, A., Hayes, J. H., and Vierhauser, M. "Cold-start software analytics". In: <i>Proceedings of the 13th International Conference on Mining Software Repositories, MSR 2016, Austin, TX, USA, May 14-22, 2016</i> , pp. 142–153. (Acceptance rate: 27%) Cheng, J., Putnam, C., and Guo, J. "Always a Tall Order": Values and Practices of Professional Game Designers of Serious Games for Health". In: <i>Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play. CHI PLAY '16</i> . (Acceptance rate: 29%) Guo, J. , Monaikul, N., Plepel, C., and Cleland-Huang, J. "Towards an intelligent domain-specific traceability solution". In: <i>ACM/IEEE International Conference on Automated Software Engineering, ASE '14, Vasteras, Sweden, September 15-19, 2014</i> , pp. 755–766. (Acceptance rate: 20%) Guo, J. , Cleland-Huang, J., and Berenbach, B. "Foundations for an expert system in domain-specific traceability". In: <i>21st IEEE International Requirements Engineering Conference, RE 2013, Rio de Janeiro-RJ, Brazil, July 15-19, 2013</i> , pp. 42–51. (Acceptance rate: 18%)
Short Papers & Workshops	Guo, J. and Cleland-Huang, J. "Augmenting Natural Language Analysis with Trace Links to Mine Domain Facts from Software Requirements". In: <i>Workshop on the Naturalness of Software, Seattle, USA, Nov 13, 2016</i>

	<p>Cleland-Huang, J., Guo, J., Monaikul, N., Lohar, S., Goss, W., and Rasin, A. “Using Natural Language Processing to Translate Software Project Queries into Structured Form”. In: <i>Workshop on the Naturalness of Software, Seattle, USA, Nov 13, 2016</i></p> <p>Guo, J. “Ontology learning and its application in software-intensive projects”. In: <i>Proceedings of the 38th International Conference on Software Engineering, ICSE 2016, Austin, TX, USA, May 14-22, 2016 - Companion Volume</i>, pp. 843–846</p> <p>Guo, J., Monaikul, N., and Cleland-Huang, J. “Trace links explained: An automated approach for generating rationales”. In: <i>23rd IEEE International Requirements Engineering Conference, RE 2015, Ottawa, ON, Canada, August 24-28, 2015</i>, pp. 202–207</p> <p>Cleland-Huang, J. and Guo, J. “Towards more intelligent trace retrieval algorithms”. In: <i>3rd International Workshop on Realizing Artificial Intelligence Synergies in Software Engineering, RAISE 2014, Hyderabad, India, June 3, 2014</i>, pp. 1–6</p>
Non-Refereed Publications	<p>Guo, J., Monaikul, N., and Cleland-Huang, J. “Trace-Links – A Novel Data Source for Ontology Generation in Software Intensive Projects”. In: <i>DePaul University School Of Computing Research Symposium, SOCRS 2015, Chicago, IL, USA, May 29, 2015</i>, pp. 1–2</p> <p>Guo, J. and Cleland-Huang, J. “Foundations for an Expert System in Domain Specific Traceability”. In: <i>DePaul University School Of Computing Research Symposium, SOCRS 2013, Chicago, IL, USA, May 31, 2013</i>, p. 35</p> <p>Guo, J. “Research on Feature Object 3D Reconstruction Based on Monocular Vision”. <i>Master Thesis</i>, Xi’an Jiaotong Univeristy, Xi’an, China. 2009</p>
Patents Issued	<p>Guo, J. and Onishi, T. “Subject region detecting apparatus”. Pat. 8,805,077. Aug. 12, 2014</p> <p>Guo, J. and Onishi, T. “Image processing apparatus, image processing method, and computer readable medium”. Pat. 8,923,610. Dec. 30, 2014</p>

Activities and Service

Co-Organizer	The 1st, 2nd, and 3rd International Workshop on Artificial Intelligence for Requirements Engineering (AIRE). 2014–2016
Prog. Committee	<p>The 25th International Requirement Engineering Conference (RE) Data Track. 2017</p> <p>The 5th International Workshop on Realizing Artificial Intelligence Synergies in Software Engineering (RAISE). 2016</p> <p>The 8th International Symposium on Software and Systems Traceability (SST). 2015</p>
Stud. Volunteer	FSE’16, RE’15, KDD’13, RE’12

Honors and Scholarship

2016	<i>NSF Travel Fund</i> , Workshop on the Naturalness of Software
2013 – 2015	<i>Summer Research Fund</i> , DePaul University
2013	<i>Ready-Set-Transfer Award</i> , 21st IEEE International Requirements Engineering Conference
07/2011	<i>Chief Minister’s Research Award</i> , Fuji Xerox
11/2005	<i>Siyuan Scholarship</i> , Xi’an Jiaotong University
2002 – 2006	<i>Innovation Fund</i> , Xi’an Jiaotong University