Shaohan Hu

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RESEARCH
INTERESTS

My research interests include quantum computing, artificial intelligence, cloud computing, cyber-physical systems, mobile ubiquitous computing, crowd and social sensing, and big data analytics.

WORK

IBM T. J. Watson Research Center, Yorktown Heights, NY   September 2016–Present
Research Staff Member, Project Manager

University of Illinois at Urbana-Champaign, Urbana, IL   January 2012–December 2016
Research Assistant

Intel Corporation - New Devices Group, Santa Clara, CA   May 2014–September 2014
Graduate Intern Technical

University of Illinois at Urbana-Champaign, Urbana, IL   August 2011–December 2011
Teaching Assistant

Dartmouth College, Hanover, NH   September 2008–September 2010
Teaching Assistant

University of Massachusetts at Amherst, Amherst, MA   January 2008–May 2008
Teaching Assistant

EDUCATION

PhD, Computer Science   May 2017
University of Illinois at Urbana-Champaign, IL USA

MS, Computer Science   June 2011
Dartmouth College, NH USA

BS, Computer Science, Mathematics and Statistics   May 2008
University of Massachusetts at Amherst, MA USA

SERVICES

Technical Program Committee
International Workshop on Quantum Software Engineering (Q-SE) 2021
Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2021
The Web Conference (WWW) 2018, 2019
International Conference on Computer Communications and Networks (ICCCN) 2019
International Conference on Internet of Things
     Design and Implementation (IoTDI) Posters & Demos 2019
International Conference on Emerging Networks and Systems Intelligence
     (EMERGING) 2017–2019
International Conference on Cyber-Technologies and Cyber-Systems (CYBER) 2017–2019
International Conference on Sensor Technologies and Applications
     (SENSORCOMM) 2017–2019
International Conference on Mobile Ubiquitous Computing, Systems,
     Services and Technologies (UBICOMM) 2012–2019
International Workshop on Social Sensing (SOCIALSENS) 2018
IEEE International Workshop on Mission-Oriented Wireless Sensor
     and Cyber-Physical System Networking (MISENET) 2018
ACM/IEEE International Conference on Information Processing in Sensor

Conference Reviewer

Journal Reviewer

Publications | arXiv 2020 | Scott Schneider, Xavier Guerin, **Shaohan Hu**, Kun-Lung Wu, *A Cloud Native Platform for Stateful Streaming*, arXiv - Distributed, Parallel, and Cluster Computing, October, 2019.

ICST 2020 | Marco Pistoia, Peng Liu, Richard Chen, **Shaohan Hu**, Stephen Wood, *Parallelization of Classical Numerical Optimization in Quantum Variational Algorithms*, The 13th IEEE International Conference on Software Testing, Validation and Verification (ICST 2020), Porto, Portugal. August 24–28, 2020.

IPSN 2020 | Abhishek Gupta, **Shaohan Hu**, Weida Zhong, Adel Sadek, Lu Su, Chunming Qiao, *Road Grade Estimation Using Crowd-sourced Smartphone Data*, The 19th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN 2020), Sydney, Australia, April 21–24, 2020.

arXiv 2019 | Arthur G. Rattew, **Shaohan Hu**, Marco Pistoia, Richard Chen, Steve Wood, *A Domain-agnostic, Noise-resistant, Hardware-efficient Evolutionary Variational Quantum Eigensolver*, arXiv - Quantum Physics, October, 2019.

ICDCS 2019 | Tarek Abdelzaher, Shuochao Yao, Yifan Hao, Yiran Zhao, Ailing Piao, Huajie Shao, Dongxin Liu, Shengzhong Liu, **Shaohan Hu**, Dulanga Weerakoon, Kasthuri Jayarajah, Archan Misra, *Eugene: Towards Deep Intelligence as a Service*, The 39th IEEE International Conference on Distributed Computing Systems (ICDCS 2019), Dallas, Texas USA. July 7–10, 2019.

Computer 2019b | Peng Liu, **Shaohan Hu**, Marco Pistoia, Chun-Fu Richard Chen, Jay Gambetta, *Stochastic Optimization of Quantum Programs*, IEEE Computer, Volume 52 Number 06, June, 2019.

Computer 2019a | **Shaohan Hu**, Peng Liu, Chun-Fu Richard Chen, Marco Pistoia, Jay Gambetta, *Reduction-based Problem Mapping for Quantum Computing*, IEEE Computer, Volume 52 Number 06, June, 2019.

DAC 2019 | **Shaohan Hu**, Dmitri Maslov, Marco Pistoia, and Jay Gambetta, *Efficient Circuits for Quantum Search over 2D Square Lattice Architecture*, The 56th Design Automation Conference - Latest Breaking Results (DAC 2019 LBR), Las Vegas, Nevada USA, June 2–6, 2019.

WWW 2019 | Shuochao Yao, Ailing Piao, Wenjun Jiang, Yiran Zhao, Huajie Shao, Shengzhong Liu, Dongxin Liu, Jinyang Li, Tianshi Wang, **Shaohan Hu**, Lu Su, Jiawei Han, Tarek Abdelzaher, *STFNets: Learning Sensing Signals from the Time-Frequency Perspective with Short-Time Fourier Neural Networks*, The Web Conference (WWW 2019), San Francisco, CA USA, May 13–17, 2019.

Infocom 2019 | Shuochao Yao, Yiran Zhao, Huajie Shao, Dongxin Liu, Shengzhong Liu, Yifan Hao, Ailing Piao, **Shaohan Hu**, Lu Su, Tarek Abdelzaher, *SADeepSense: Self-Attention Deep Learning Framework for Heterogeneous On-Device Sensors in Internet of Things Applications*, The 38th IEEE International Conference on Computer Communications (INFOCOM 2019), Paris, France, April 29–May 2, 2019.

IMWUT 2018 | Shuochao Yao, Yiran Zhao, Huajie Shao, Chao Zhang, Aston Zhang, **Shaohan Hu**, Dongxin Liu, Shengzhong Liu, Lu Su, Tarek F. Abdelzaher, *SenseGAN: Enabling Deep Learning for Internet of Things with a Semi-Supervised Framework*, Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), Volume 2 Issue 3, Article No. 144, Presented at UbiComp, Singapore, September, 2018. Presented at UbiComp, Singapore, October 9–11, 2018.

ICSE 2018	**Shaohan Hu**, Peng Liu, Chun-Fu Richard Chen, Marco Pistoia, *Automatically Solving NP-Complete Problems on a Quantum Computer*, The 40th International Conference on Software Engineering (ICSE 2018) Posters, Gothenburg, Sweden, May 27–June 3, 2018.
EMDL 2018	Shuochao Yao, Yiran Zhao, **Shaohan Hu**, Tarek F. Abdelzaher, *Quality-DeepSense: Quality-Aware Deep Learning Framework for Internet of Things Applications with Sensor-Temporal Attention*, The 2nd International Workshop on Embedded and Mobile Deep Learning (EMDL 2018), Munich, Germany, June 15, 2018.
COMPUTER 2018	Shuochao Yao, Yiran Zhao, Aston Zhang, **Shaohan Hu**, Huajie Shao, Chao Zhang, Lu Su, Tarek Abdelzaher, *Deep Learning for the Internet of Things*, IEEE Computer, Volume 51 Number 05, May, 2018.
TPDS 2018	Wenjun Jiang, Chenglin Miao, Lu Su, Qi Li, **Shaohan Hu**, Shiguang Wang, Jing Gao, Hengchang Liu, Tarek F. Abdelzaher, Jiawei Han, Xue Liu, Yan Gao, Lance Kaplan, *Towards Quality Aware Information Integration in Distributed Sensing Systems*, IEEE Transactions on Parallel and Distributed Systems (IEEE TPDS), Volume 12 Number 1, January, 2018.
JSAN 2018	Jongdeog Lee, Kelvin Marcus, Tarek Abdelzaher, Md Tanvir A. Amin, Amotz Bar-Noy, William Dron, Ramesh Govindan, Reginald Hobbs, **Shaohan Hu**, Jung-Eun Kim, Lui Sha, Shuochao Yao, and Yiran Zhao, *Athena: Towards Decision-Centric Anticipatory Sensor Information Delivery*, Journal of Sensor and Actuator Networks (JSAN), Volume 7 Number 1, Article Number 5, January, 2018.
IMWUT 2017	Yiran Zhao, Shuochao Yao, Shen Li, **Shaohan Hu**, Huajie Shao, Tarek Abdelzaher, *VibeBin: A Vibration-Based Waste Bin Level Detection System*, Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), Volume 1 Issue 3, Article No. 122, Presented at UbiComp, Maui, HI USA, September, 2017.
TCPS 2017	Hongwei Wang, Yunlong Gao, **Shaohan Hu**, Shiguang Wang, Renato Mancuso, Minje Kim, Poliang Wu, Lu Su, Lui Sha, Tarek Abdelzaher, *On Exploiting Structured Human Interactions to Enhance Sensing Accuracy in Cyberphysical Systems*, ACM Transactions on Cyber-Physical Systems (IEEE TCPS), Volume 1, Number 3, July, 2017.
ICDCS 2017	Tarek Abdelzaher, Md Tanvir Al Amin, Amotz Bar-Noy, William Dron, Ramesh Govindan, Reginald Hobbs, **Shaohan Hu**, Jung-Eun Kim, Jongdeog Lee, Kelvin Marcus, Shuochao Yao and Yiran Zhao, *Decision-driven Execution: A Distributed Resource Management Paradigm for the Age of IoT*, The 37th International Conference on Distributed Computing Systems (ICDCS 2017), Atlanta, GA USA. June 5–8, 2017.
ICDCS 2017	Shen Li, Md Tanvir Al Amin, Raghu Ganti, Mudhakar Srivatsa, **Shaohan Hu**, Yiran Zhao and Tarek Abdelzaher, *Stark: Optimizing In-Memory Computing For Dynamic Dataset Collections*, The 37th International Conference on Distributed Computing Systems (ICDCS 2017), Atlanta, GA USA, June 5–8, 2017.
VTC 2017	Yunfei Hou, Abhishek Gupta, Tong Guan, **Shaohan Hu**, Lu Su, Chunming Qiao, *VehSense: Slippery Road Detection Using Smartphones*, The IEEE 85th Vehicular Technology Conference (VTC 2017), Sydney, Australia, June 4–7, 2017.

TMC 2017   Chao Xu, **Shaohan Hu**, Wei Zheng, Tarek F. Abdelzaher, Pan Hui, Zhiheng Xie, Hengchang Liu, and John Stankovic, *Efficient 3G/4G Budget Utilization in Mobile Sensing Applications*, IEEE Transactions on Mobile Computing (IEEE TMC), Volume 16, Number 6, June, 2017.

ICCPS 2017   Yiran Zhao, Shen Li, **Shaohan Hu**, Lu Su, Shuochao Yao, Huajie Shao and Tarek Abdelzaher, *GreenDrive: A Smartphone-based Intelligent Speed Adaptation System With Real-time Traffic Signal Prediction*, The 8th International Conference on Cyber-Physical Systems (ICCPS 2017), Pittsburgh, PA USA, April 18–21, 2017. (**Best paper award**)

WWW 2017   Shuochao Yao, **Shaohan Hu**, Yiran Zhao, Aston Zhang, Tarek Abdelzaher, *DeepSense: A Unified Deep Learning Framework for Time-Series Mobile Sensing Data Processing*, The 26th International International World Wide Web Conference (WWW 2017), Perth, Australia, April 3–7, 2017.

TMC 2016в   Xiaoshan Sun, **Shaohan Hu**, Lu Su, Tarek F. Abdelzaher, Pan Hui, Wei Zheng, Hengchang Liu, John Stankovic, *Participatory Sensing Meets Opportunistic Sharing: Automatic Phone-to-Phone Communication in Vehicles*, IEEE Transactions on Mobile Computing (IEEE TMC), Volume 15, Number 10, October, 2016.

VLDB 2016   Yiran Zhao, Shen Li, **Shaohan Hu**, Hongwei Wang, Shuochao Yao, Huajie Shao, Tarek Abdelzaher, *An Experimental Evaluation of Datacenter Workloads On Low-Power Embedded Micro Servers*, The 42nd International Conference on Very Large Data Bases (VLDB 2016), New Delhi, India, September 5–9, 2016.

ICCM 2016   Christian Lebiere, Don Morrison, Tarek Abdelzaher, **Shaohan Hu**, Cleotilde Gonzalez, Norbou Buchler, Vladislav D. Veksler, *Cognitive Models of Prediction as Decision Aids*, The 14th International Conference on Cognitive Modeling (ICCM 2016), College Park, PA USA, August 4–6, 2016.

ICDCS 2016   Shuochao Yao, **Shaohan Hu**, Shen Li, Yiran Zhao, Lu Su, Lance Kaplan, Aylin Yener, Tarek F. Abdelzaher, *On Source Dependency Models for Reliable Social Sensing: Algorithms and Fundamental Error Bound*, The 36th IEEE International Conference on Distributed Computing Systems (ICDCS 2016), Nara, Japan, June 27–30, 2016.

IPSN 2016   Shuochao Yao, Md Tanvir Amin, Lu Su, **Shaohan Hu**, Shen Li, Shiguang Wang, Yiran Zhao, Tarek Abdelzaher, Lance Kaplan, Charu Aggarwal, Aylin Yener, *Recursive Ground Truth Estimator for Social Data Streams*, The 15th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN 2016), Vienna, Austria, April 11–14, 2016.

TMC 2016а   Fatemeh Saremi, Omid Fatemieh, Hossein Ahmadi, Hongyan Wang, Tarek Abdelzaher, Raghu Ganti, Hengchang Liu, **Shaohan Hu**, Shen Li, Lu Su, *Experiences with GreenGPS – Fuel-Efficient Navigation using Participatory Sensing*, IEEE Transactions on Mobile Computing (IEEE TMC), Volume 15, Number 3, March 2016.

RTSS 2015   **Shaohan Hu**, Shuochao Yao, Haiming Jin, Yiran Zhao, Yitao Hu, Xiaochen Liu, Nooreddin Naghibolhosseini, Shen Li, Akash Kapoor, William Dron, Lu Su, Amotz Bar-Noy, Pedro Szekely, Ramesh Govindan, Reginald Hobbs, Tarek F. Abdelzaher, *Data Acquisition for Real-time Decision-making under Freshness Constraints*, The 36th IEEE Real-Time Systems Symposium (RTSS 2015), San Antonio, TX USA, December 1–4, 2015.

JRTS 2015   Dong Wang, Tarek Abdelzaher, Lance Kaplan, Raghu Ganti, **Shaohan Hu**, Hengchang Liu, *Reliable Social Sensing with Physical Constraints: Analytic Bounds and Performance Evaluation*, Journal of Real-Time Systems, Volume 51, Number 6, November, 2015.

UBICOMP 2015   **Shaohan Hu**, Lu Su, Shen Li, Shiguang Wang, Chenji Pan, Siyu Gu, Md Tanvir Amin, Hengchang Liu, Suman Nath, Romit Roy Choudhury, Tarek F. Abdelzaher, *Experiences with eNav: A Low-power Vehicular Navigation System*, The ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp 2015), Osaka, Japan, September 7–11, 2015.

ATC 2015   Shen Li, **Shaohan Hu**, Raghu Ganti, Mudhakar Srivatsa, Tarek Abdelzaher, *Pyro: A Spatial-Temporal Big-Data Storage System for Dynamic Workload Hotspots*, USENIX Annual Technical Conference (USENIX ATC 2015), Santa Clara, CA USA, July 8–10, 2015.

TOSN 2015   **Shaohan Hu**, Lu Su, Hengchang Liu, Hongyan Wang, Tarek F. Abdelzaher, *SmartRoad: Smartphone-based Crowd Sensing for Traffic Regulator Detection and Identification*, ACM Transactions on Sensor Networks (ACM TOSN), Volume 11, Number 4, July 2015.

DCOSS 2015   **Shaohan Hu**, Shen Li, Shuochao Yao, Lu Su, Ramesh Govindan, Reginald Hobbs, Tarek F. Abdelzaher, *On Exploiting Logical Dependencies for Minimizing Additive Cost Metrics in Resource-Limited Crowdsensing*, The 11th IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS 2015), Fortaleza, Brazil, June 10–12, 2015.

IPSN 2015   Shiguang Wang, Lu Su, Shen Li, **Shaohan Hu**, Tanvir Amin, Hongwei Wang, Shuochao Yao, Lance Kaplan, Tarek Abdelzaher, *Scalable Social Sensing of Interdependent Phenomena*, The 14th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN 2015), Seattle, WA USA, April 13–17, 2015.

RTAS 2015   Shen Li, **Shaohan Hu**, Tarek Abdelzaher, *The Packing Server for Real-time Scheduling of MapReduce Workflows*, The 21st IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS 2015), Seattle, WA USA, April 13–16, 2015.

ICCPS 2015   Yunlong Gao, **Shaohan Hu**, Renato Mancuso, Hongwei Wang, Minje Kim, PoLiang Wu, Lu Su, Lui Sha, Tarek Abdelzaher, *Exploiting Structured Human Interactions to Enhance Estimation Accuracy in Cyber-physical Systems*, The 6th International Conference on Cyber-Physical Systems (ICCPS 2015), Seattle, WA USA, April 14–16, 2015.

RTSS 2014   Lu Su, Qi Li, **Shaohan Hu**, Shiguang Wang, Jing Gao, Hengchang Liu, Tarek Abdelzaher, Jiawei Han, Xue Liu, Yan Gao, Lance Kaplan, *Generalized Decision Aggregation in Distributed Sensing Systems*, The 35th IEEE Real-Time Systems Symposium (RTSS 2014), Rome, Italy, December 2–5, 2014.

ICDCS 2014   Shen Li, **Shaohan Hu**, Shiguang Wang, Lu Su, Tarek F. Abdelzaher, Indranil Gupta, Richard Pace, *WOHA: Deadline-Aware Map-Reduce Workflow Scheduling Framework over Hadoop Cluster*, The 34th International Conference on Distributed Computing Systems (ICDCS 2014), Madrid, Spain. June 30–July 3, 2014.

ICAC 2014   Shen Li, **Shaohan Hu**, Shiguang Wang, Siyu Gu, Chenji Pan, Tarek F. Abdelzaher, *WattValet: Heterogenous Energy Storage Management in Data Centers for Improved Power Capping*, The 11th International Conference on Autonomic Computing (ICAC 2014), Philadelphia, PA USA, June 18–20, 2014.

DCOSS 2014	Siyu Gu, Chenji Pan, Hengchang Liu, Shen Li, **Shaohan Hu**, Lu Su, Shiguang Wang, Dong Wang, Md Tanvir A Amin, Ramesh Govindan, Charu Aggarwal, Raghu Ganti, Mudhakar Srivatsa, Amotz Bar-Noy, Peter Terlecky, Tarek Abdelzaher, *Data Extrapolation in Social Sensing for Disaster Response*, The 10th IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS 2014), Marina Del Rey, CA USA, May 26–28, 2014.
INFOCOM 2014	**Shaohan Hu**, Hengchang Liu, Lu Su, Hongyan Wang, Tarek F. Abdelzaher, Pan Hui, Wei Zheng, Zhiheng Xie, John Stankovic, *Towards Automatic Phone-to-Phone Communication for Vehicular Networking Applications*, The 33rd IEEE International Conference on Computer Communications (INFOCOM 2014), Toronto, Canada, April 27–May 2, 2014.
IPSN 2014	**Shaohan Hu**, Lu Su, Shen Li, Shiguang Wang, Chenji Pan, Siyu Gu, Md Tanvir Al Amin, Hengchang Liu, Suman Nath, Romit Roy Choudhury, Tarek F. Abdelzaher, *Poster Abstract: eNav – a Smartphone-based Energy Efficient Vehicular Navigation System*, The 13th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN 2014), Berlin, Germany, April 15–17, 2014. (**Best poster award**)
PUC 2014	Nicholas D. Lane, Ye Xu, Hong Lu, **Shaohan Hu**, Tanzeem Choudhury, Andrew T. Campbell, Feng Zhao, *Community Similarity Networks*, ACM/Springer Journal of Personal and Ubiquitous Computing (PUC), Special Issue on Cross-Community Mining, February, 2014.
RTSS 2013	Dong Wang, Tarek F. Abdelzaher, Lance Kaplan, Raghu Ganti, **Shaohan Hu**, Hengchang Liu, *Exploitation of Physical Constraints for Reliable Social Sensing*, The 34th IEEE Real-Time Systems Symposium (RTSS 2013), Vancouver, Canada, December 4–6, 2013.
SENSYS 2013	Hengchang Liu, Siyu Gu, Chenji Pan, Wei Zheng, Shen Li, **Shaohan Hu**, Shiguang Wang, Dong Wang, Tanvir Amin, Lu Su, Zhiheng Xie, Ramesh Govindan, Charu Aggarwal, Amotz Barnoy, Tarek F. Abdelzaher, *Demo Abstract: Extrapolation from Participatory Sensing Data*, The 11th ACM Conference on Embedded Networked Sensor Systems (SenSys 2013), Rome, Italy, November 11–15, 2013.
ICCCN 2013	Shiguang Wang, **Shaohan Hu**, Shen Li, Hengchang Liu, Md Yusuf Sarwar Uddin, and Tarek F. Abdelzaher, *MINERVA: Information-Centric Programming for Social Sensing*, The 22nd International Conference on Computer Communications and Networks (ICCCN 2013), Nassau, Bahamas, July 30–August 2, 2013.
ICDCS 2013	Shen Li, Shiguang Wang, Fan Yang, **Shaohan Hu**, Fatemeh Saremi, Tarek F. Abdelzaher, *Proteus: Power Proportional Memory Cache Cluster in Data Centers*, The 33rd International Conference on Distributed Computing Systems (ICDCS 2013), Philadelphia, PA USA, July 8–11, 2013.
INFOCOM 2013	Hengchang Liu, **Shaohan Hu**, Wei Zheng, Zhiheng Xie, Shiguang Wang, Pan Hui, and Tarek F. Abdelzaher, *Efficient 3G Budget Utilization in Mobile Participatory Sensing Applications*, The 32nd IEEE International Conference on Computer Communications (INFOCOM 2013), Turin, Italy, April 14–19, 2013.
IPSN 2013	**Shaohan Hu**, Lu Su, Hengchang Liu, Hongyan Wang, Tarek F. Abdelzaher, *Poster Abstract: SmartRoad: A Crowd-Sourced Traffic Regulator Detection and Identification System*, The 12th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN 2013), Philadelphia, PA USA, April 8–11, 2013.

RTSS 2012	Lu Su, **Shaohan Hu**, Shen Li, Feng Liang, Jing Gao, Tarek F. Abdelzaher, and Jiawei Han, *Quality of Information based Data Selection and Transmission in Wireless Sensor Networks*, The 33rd IEEE Real-Time Systems Symposium (RTSS 2012), San Juan, Puerto Rico, December 4–7, 2012.	
UBICOMP 2011	Nicholas D. Lane, Ye Xu, Hong Lu, **Shaohan Hu**, Tanzeem Choudhury, Andrew T. Campbell, and Feng Zhao, *Enabling Large-scale Human Activity Inference on Smartphones using Community Similarity Networks (CSN)*, The 13th International Conference on Ubiquitous Computing (UbiComp 2011), Beijing, China, September 17–21, 2011. (**Best paper nominee**)	
MOBIHELD 2010	Andrew T. Campbell, Tanzeem Choudhury, **Shaohan Hu**, Hong Lu, Matthew K. Mukerjee, Mashfiqui Rabbi, and Rajeev D. S. Raizada, *NeuroPhone: Brain-Mobile Phone Interface using a Wireless EEG Headset*, The 2nd ACM SIGCOMM Workshop on Networking, Systems, and Applications on Mobile Handhelds (MobiHeld 2010), New Delhi, India, August 30, 2010.	
PAKDD 2010	Pallika Kanani, Andrew McCallum and **Shaohan Hu**, *Resource-bounded Information Extraction: Acquiring Missing Feature Values On Demand*, The 14th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2010), Hyderabad, India. June 21–24, 2010. (**Best student paper runner-up award**)	

PATENTS	US 10832173 *Cognitive Software Development*	GRANTED, 2020
	US 10803395 *Quantum Computations of Classical Specifications*	GRANTED, 2020
	US 10713055, US 10831495 *Parallelization of Numeric Optimizers*	GRANTED, 2020
	US 10637480 *Multi-control Quantum State Inversion Gate*	GRANTED, 2020
	US 16/540721 *Quantum Reinforcement Learning Agent*	FILED, 2019
	US 20200342293A1 *Quantum Computational Method and Device*	FILED, 2019
	US 20200042882A1 *Monte Carlo Markov Chain based Quantum Program Optimization*	FILED, 2018
	US 20190220782A1 *Simplified Quantum Programming*	FILED, 2019
	US 20200202247A1 *Adaptive Quantum Circuit Construction for Multiple-Controlled-Not Gates*	FILED, 2018
	US 20200183938A1 *Automatic Quantum Searching of Object Database*	FILED, 2018

TEACHING

University of Illinois at Urbana-Champaign
- **Teaching Assistant**
  CS 125: Introduction to Computer Science
  Basic Data Structure, Algorithm, OOP using Java

Dartmouth College
- **Teaching Assistant**
  CS 23: Software Design and Implementation — or, how to be a hacker
  Linux Bash scripting, design and implementation using C: web search (data crawling, indexing, and querying), and embedded Linux environment distributed concurrent system (remote robot control system)

- **Teaching Assistant**
  CS 8: Problem Solving with Computer Science
  Functional programming, Haskell language

- **Teaching Assistant**
  CS 5: Introduction to Computer Science
  Basic Data Structure, OOP using Java

- **Teaching Assistant**
  CS 4: Concepts in Computing
  Overview of computing and computer science, basic programming using html/css/javascript, debugging, design

University of Massachusetts at Amherst
- **Teaching Assistant**
  Math 300: Fundamental Concepts of Mathematics
  Discrete mathematics, number theory, logics, set theory, rigorous proofs

- **Teaching Assistant**
  CS 311: Introduction to Algorithms
  Basic algorithm design, analysis, and implementations, sorting, searching, string processing, graphs

AWARDS AND HONORS

ICCPS Best Paper Award, April 2017

IPSN Best Poster Award, April 2014

Teachers Rated Excellent, Department of Computer Science, UIUC, March 2012

UBICOMP Best Paper Nominee, September 2011

Best TA, Department of Computer Science, Dartmouth College, September 2010

PAKDD Best Student Paper Runner-up, June 2010

Outstanding Graduate Student Teacher, Dartmouth Center for the Advancement of Learning, Dartmouth College, April 2010

CSEM (Computer Science, Engineering and Mathematics) Scholarship, UMass Amherst, January

2005–May 2008

Dean's List Honors, UMass Amherst, January 2005–May 2008

Barksdale Scholarship, UMass Amherst, March 2007

First Place Winner, Henry Jacob Mathematics Competition, UMass Amherst, March 2006

Second Place Winner, Henry Jacob Mathematics Competition, UMass Amherst, March 2005

WORK
AUTHORIZATION

U.S. Citizen