

Daniel (Yue) Zhang

PH.D. CANDIDATE · UNIVERSITY OF NOTRE DAME

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Research Interest

My research focuses on social (human-centric) sensing and computing, big data analytics, real-time and energy-aware edge computing, deep learning for misinformation detection, and large-scale real-time distributed systems.

Education

University of Notre Dame

PH.D. IN COMPUTER SCIENCE & ENGINEERING (ADVISOR: DR. DONG WANG)

Notre Dame, IN, USA
Jun. 2016 - present (3rd Year)

Purdue University

M.S. IN INFORMATION SECURITY (ADVISOR: DR. MELISSA DARK)

West Lafayette, IN, USA
Aug. 2012 - Aug. 2014

Shanghai Jiao Tong University

B.S. IN INFORMATION SECURITY ENGINEERING

Shanghai, China
Sep. 2008 - Jun. 2012

Professional Experience

Research Assistant

CSE IN UNIVERSITY OF NOTRE DAME

May. 2017 - PRESENT
Notre Dame, IN

- Scalable and robust Truth Analysis on social media platform
- Real-time game-theoretic task allocation to large-scale non-cooperative edge devices
- Spatio-temporal predictive modeling with noisy and incomplete data

Graduate Teaching Assistant

CSE IN UNIVERSITY OF NOTRE DAME

Aug. 2016 - May. 2017
Notre Dame, IN

- Computer Networks (Fall 2016), Cyber Physical Systems (Spring 2017).

Systems Engineer

CARFAX, INC.

Nov. 2014 - May. 2016
Columbia, MO, USA

- Migrating current vehicle record receipt system architecture from VMS +Oracle to Docker + Linux + GridFS + RabbitMQ + CrushFtp

Honors & Awards

2018	Outstanding Graduate Student Teaching Award , University of Notre Dame	Notre Dame, IN, USA
2018	Student Travel Award (\$800) , 2018 IEEE International Conference on Big Data (BigData 2018)	Seattle, WA, USA
2018	Student Travel Grant (\$1000) , The Third ACM/IEEE Symposium on Edge Computing (SEC 2018)	Bellevue, WA, USA
2018	NSF Travel Award (\$1000) , IEEE International Conference on Sensing, Communication and Networking (SECON 2018)	Hong Kong, China
2017	Student Travel Award (\$850) , 2017 IEEE International Conference on Big Data (BigData 2017)	Boston, MA, USA

Publications

Under Review

1. [J] **Daniel (Yue) Zhang**, Yang Zhang, Qi Li, and Dong Wang. "Sparse User Check-in Venue Prediction By Exploring Latent Decision Contexts From Location-Based Social Networks", submitted to IEEE Transactions on BigData.
2. [C] **Daniel (Yue) Zhang**, Yang Zhang, Qi Li, and Dong Wang. "CrowdLearn: A Crowd-AI Hybrid System for Deep Learning-based Damage Assessment Applications", submitted to IEEE ICDCS.

Published/Accepted

1. [C] **Daniel (Yue) Zhang**, Yang Zhang, Md Tahmid Rashid, Xukun Li, Nathan Vance, and Dong Wang. "HeteroEdge: Taming The Heterogeneity of Edge Computing System in Social Sensing." In ACM/IEEE IoTDI 2019.
2. [C] **Daniel (Yue) Zhang**, and Dong Wang. "An Integrated Top-down and Bottom-up Task Allocation Approach in Social Sensing based Edge Computing Systems", In IEEE INFOCOM, 2019. [Top conference in networking and systems (Acceptance Rate: 19.7%)].
3. [C] **Daniel (Yue) Zhang**, Lanyu Shang (co-first author), Biao Geng, Shuyue Lai, Ke Li, Hongmin Zhu, Md Tanvir Amin, and Dong Wang. "FauxBuster: A Content-free Fauxtography Detector Using Social Media Comments." In 2018 IEEE International Conference on BigData. IEEE, 2018. (Acceptance Rate: 18.9%)
4. [C] **Daniel (Yue) Zhang**, Lixing Song, Qi Li, Yang Zhang, and Dong Wang. "StreamGuard: A Bayesian Network Approach to Copyright Infringement Detection Problem in Large-scale Live Video Sharing Systems." In 2018 IEEE International Conference on Big Data (BigData), 2018. (Acceptance Rate: 18.9%)
5. [C] **Daniel (Yue) Zhang**, Yue Ma, Chao Zheng, Yang Zhang, X. Sharon Hu, and Dong Wang. "Cooperative-Competitive Task Allocation in Edge Computing for Delay-Sensitive Social Sensing." In Proceedings of the Third ACM/IEEE Symposium on Edge Computing (SEC 2018), 2018. [Top Conference in Edge Computing]
6. [C] **Daniel (Yue) Zhang**, Qi Li, Herman Tong, Jose Bandila, Yang Zhang, and Dong Wang. "Crowdsourcing-based Copyright Infringement Detection in Live Video Streams." In Advances in Social Networks Analysis and Mining (ASONAM), 2018 IEEE/ACM International Conference on, Barcelona, Spain, 2018. (Acceptance Rate: 15%)
7. [C] **Daniel (Yue) Zhang**, Jose Bandila, Yang Zhang, and Dong Wang. "Towards Reliable Missing Truth Discovery in Online Social Media Sensing Applications." In Advances in Social Networks Analysis and Mining (ASONAM), 2018 IEEE/ACM International Conference on, Barcelona, Spain, 2018. (Acceptance Rate: 15%)
8. [C] **Daniel (Yue) Zhang**, Yang Zhang, Qi Li, Nathan Vance, and Dong Wang. "Robust State Prediction with Incomplete and Noisy Measurements in Collaborative Sensing." In IEEE MASS 2018, Chengdu, China, 2018.
9. [J] **Daniel (Yue) Zhang**, Dong Wang, Yang Zhang, Nathan Vance, and Steven Mike. "On Scalable and Robust Truth Discovery in Big Data Social Media Sensing Applications", IEEE Transactions on BigData, 2018, In press. [Top IEEE Journal in Big Data Analytics]
10. [C] **Daniel (Yue) Zhang**, Yue Ma, Yang Zhang, Suwen Lin, X. Sharon Hu, and Dong Wang. "A Real-Time and Non-Cooperative Task Allocation Framework for Social Sensing Applications in Edge Computing Systems." In 24th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS 2018) Portugal, 2018. [Top Conference in Real-Time Systems]
11. [C] **Daniel (Yue) Zhang**, Dong Wang, Hao Zheng, Xin Mu, Qi Li, and Yang Zhang. "Large-scale Point-of-Interest Category Prediction Using Natural Language Processing Models." In 2017 IEEE International Conference on Big Data (BigData), 2017. (Acceptance Rate: 20%)
12. [C] **Daniel (Yue) Zhang**, Dong Wang, and Yang Zhang. "Constraint-Aware Dynamic Truth Discovery in Big Data Social Media Sensing." In 2017 IEEE International Conference on Big Data (BigData), 2017 (Acceptance Rate: 18%)
13. [C] **Daniel (Yue) Zhang**, Chao Zheng, Dong Wang, Doug Thain, Chao Huang, Xin Mu, and Greg Madey. "Towards Scalable and Dynamic Social Sensing Using A Distributed Computing Framework." In 37th IEEE International Conference on Distributed Computing Systems (ICDCS 2017), Atlanta, GA, USA, 2017. [Top Conference in Distributed Systems. (Acceptance Rate: 16.9%)]
14. [C] **Daniel (Yue) Zhang**, Rungang Han, Dong Wang, and Chao Huang. "On robust truth discovery in sparse social media sensing." In 2016 IEEE International Conference on Big Data, pp. 1076-1081. IEEE, 2016.(Acceptance Rate: 20%)
15. [C] Yang Zhang, Yiwen Lu, **Daniel (Yue) Zhang**, Lanyu Shang, and Dong Wang: "RiskSens: A Multi-view Learning Approach to Identifying Risky Traffic Locations in Intelligent Transportation Systems Using Social and Remote Sensing." In 2018 IEEE International Conference on Big Data (BigData), 2018. (Acceptance Rate: 18.9%)
16. [C] Nathan Vance, **Daniel (Yue) Zhang**, Yang Zhang, and Dong Wang. "Privacy-aware Edge Computing in Social Sensing Applications using Ring Signatures." In ICPADS, Singapore, 2018.
17. [C] Yang Zhang, **Daniel (Yue) Zhang**, Nathan Vance, Qi Li, and Dong Wang. "A Light-weight and Quality-aware Online Adaptive Sampling Approach for Streaming Social Sensing in Cloud Computing." In ICPADS, Singapore, 2018.
18. [C] Yang Zhang, **Daniel (Yue) Zhang**, Qi Li, and Dong Wang. "Towards Optimized Online Task Allocation in Cost-Sensitive Crowdsensing Applications." In IEEE IPCCC, Orlando, Florida, USA, 2018. (Acceptance Rate: 28.8%)
19. [C] Yang Zhang, **Daniel (Yue) Zhang**, Nathan Vance, and Dong Wang. "Optimizing Online Task Allocation for Multi-Attribute Social Sensing", ICCCN, Hangzhou, China, 2018.
20. [C] Dong Wang, **Daniel (Yue) Zhang**, and Chao Huang. "Towards Reliable Hypothesis Validation in Social Sensing Applications", IEEE International Conference on Sensing, Communication and Networking (SECON 2018), Hong Kong, China, 2018. (Acceptance Rate: 23.2%)
21. [C] Yang Zhang, Nathan Vance, **Daniel (Yue) Zhang**, and Dong Wang. "On Opinion Characterization in Social Sensing: A Multi-View Subspace Learning Approach" International Conference on Distributed Computing in Sensor Systems (DCOSS 18), New York, USA, 2018.
22. [C] Chao Huang, Dong Wang, Shenglong Zhu, and **Daniel (Yue) Zhang**. "Towards unsupervised home location inference from online social media." In 2016 IEEE International Conference on Big Data, pp. 676-685. IEEE, 2016.(Acceptance Rate: 18%)

Poster and Demo

- [D] **Daniel (Yue) Zhang**, Jose Bandila, Herman Tong, and Dong Wang. “An End-to-End Scalable Copyright Detection System for Online Video Sharing Platforms.” In ACM/IEEE ASONAM, Barcelona, Spain, 2018.
- [D] **Daniel (Yue) Zhang**, Nathan Vance, and Dong Wang. “Demo Abstract: Real-time Heterogeneous Edge Computing System for Social Sensing Applications.” In IEEE RTAS 2018, Porto, Portugal, 2018.
- [D] Nathan Vance, Ryan Mackey, **Daniel (Yue) Zhang**, and Dong Wang. “Simulating Large-scale Social Sensing based Edge Computing Systems with Heterogeneous Network Configurations.”, In IEEE SECON 2018, Hong Kong, China, 2018.

Thesis

[T] **Daniel (Yue) Zhang**. “A cross-site study of user behavior and privacy perception in social networks.” Thesis. Purdue University, 2014.

Paper Code: *Journal paper: [J]; Conference paper: [C]; Workshop paper: [W]; Demo Paper: [D]; Poster: [P]; Thesis: [T]*

Projects

Social Sensing based Edge Computing Ecosystem

Aug. 2017 - present

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Notre Dame, IN

- Proposing a new Social Sensing based Edge Computing (SSEC) paradigm that leverages billions of privately owned devices to perform delay-sensitive and large scale social sensing applications.
- Building a SSEC system platform using AWS + Kubernetes + heterogeneous embedded systems.
- Developing new task allocation schemes that assure the QoS of the SSEC system being met.
- Developing new incentive mechanisms that allow rationally selfish end users to contribute their edge devices to trade computation resources for rewards.
- Publications:** ACM/IEEE SEC’18, IEEE RTAS’18, ACM/IEEE IoTDI’19, IEEE INFOCOM’19

Copyright Detection in Live Video Streams

Aug. 2017 - present

CSE IN UNIVERSITY OF NOTRE DAME

Notre Dame, IN

- Designing a novel content-free approach to detect copyright infringements in live video streams using the live chat messages from the audience.
- Developing an end2end copyright detection system that outperforms existing commercial solution.
- Publications:** ACM/IEEE ASONAM’18, IEEE BigData’18

Spatio-temporal Prediction with Noisy and Incomplete Data

May 2017 - present

CSE IN UNIVERSITY OF NOTRE DAME

Notre Dame, IN

- Develop new predictive models to infer user mobility pattern using LBSN data.
- Develop novel context-aware spatiotemporal inference scheme using Dynamic Topic Modeling and Bayesian Estimation to predict states of physical variables given noisy and sparse data.
- Publications:** IEEE MASS’18, IEEE BigData’17, ACM/IEEE ASONAM’18

Scalable and Robust Truth Analysis on Social Media

May 2016 - present

CSE IN UNIVERSITY OF NOTRE DAME

Notre Dame, IN

- Develop new Truth Discovery algorithms to jointly estimate the reliability of social media users as well as identifying truthful information on social media platforms.
- Develop novel social media sensing applications such as disaster response and critical resource detection.
- Build scalable and efficient distributed system platforms to process massive social media streams.
- Publications:** IEEE ICDCS’17, IEEE BigData’16, IEEE TBD, IEEE BigData’17, ACM/IEEE ASONAM’18

Service

- 2019 **Co-Web Chair**, SOCIALSENS 2019: International Workshop on Social Sensing, Montreal, Canada
- 2018 **Student Volunteer**, IEEE International Conference on BigData, Seattle, WA, USA
- 2018 **Graduate Recruitment Week Volunteer**, Department of CSE, University of Notre Dame
- 2018 **External Reviewer**, The 24th Conference on Knowledge Discovery and Data Mining (KDD)
- 2018 **External Reviewer**, The Third International Workshop on Social Sensing
- 2018 **External Reviewer**, ACM Transactions on Sensor Networks (TOSN)
- 2017 **External Reviewer**, International Conference on Information Processing in Sensor Networks (IPSN 18)
- 2017 **Student Volunteer**, IEEE International Conference on BigData, Boston, MA, USA
- 2010 **Student Volunteer**, Expo 2010, Shanghai, China