

Daniel (Yue) Zhang

PH.D. CANDIDATE · UNIVERSITY OF NOTRE DAME

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Research Interest

My research focuses on human-cyber-physical systems, big data analytics, edge computing, human-AI hybrid system, deep learning for misinformation detection, and large-scale real-time distributed systems. [[My Google Scholar Link](#)]

Education

University of Notre Dame

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

Notre Dame, IN, USA
Jun. 2016 - May 2020 (expected)

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

2019	Outstanding Graduate Research Assistant Award , CSE Department, University of Notre Dame	Notre Dame, IN, USA
2018	Outstanding Graduate Student Teaching Award , University of Notre Dame	Notre Dame, IN, USA
2019	Student Travel Award (\$800) , 2019 International Conference on Distributed Computing Systems	Dallas, TX, USA
2018	Student Travel Award (\$800) , 2018 IEEE International Conference on BigData	Seattle, WA, USA
2018	Student Travel Grant (\$1000) , The Third ACM/IEEE Symposium on Edge Computing 2018	Bellevue, WA, USA
2018	NSF Travel Award (\$1000) , 2018 IEEE International Conference on Sensing, Communication and Networking	Hong Kong, China
2017	Student Travel Award (\$850) , 2017 IEEE International Conference on BigData	Boston, MA, USA

Publications

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

Under Review

1. [J] **D.Y. Zhang**, Y. Zhang, Q. Li, and D. Wang. "Sparse User Check-in Venue Prediction By Exploring Latent Decision Contexts From Location-Based Social Networks.", submitted to IEEE Transactions on BigData.
2. [J] **D.Y. Zhang**, Y. Ma, X.S. Hu, and D. Wang. "Towards Privacy-aware Task Allocation in Social Sensing based Edge Computing Systems.", submitted to IEEE Transactions on Computers.

Published/Accepted (* for Co-First Authorship)

2. [C] **D.Y. Zhang**, N. Vance, Y. Zhang, M.T. Rashid, and D. Wang. "EdgeBatch: Towards AI-empowered Optimal Task Batching in Intelligent Edge Systems.", In 40th IEEE Real-Time Systems Symposium (RTSS),2019. [Top conference in real-time systems] .
2. [C] **D.Y. Zhang**, B. Ni, Q. Zhi, T. Plummer, Q. Li, H. Zheng, Q. Zeng, Y. Zhang and D. Wang. "Through The Eyes of A Poet: Classical Poetry Recommendation with Visual Input on Social Media.", In Advances in Social Networks Analysis and Mining (ASONAM),2019. (Acceptance Rate: 14%) .
3. [C] **D.Y. Zhang**, N. Vance, and D. Wang. "When Social Sensing Meets Edge Computing: Vision and Challenges.", In IEEE ICCCN, 2019. [Invited Paper].
4. [C] **D.Y. Zhang**, Y. Zhang, Q. Li, T. Plummer, and D. Wang. "CrowdLearn: A Crowd-AI Hybrid System for Deep Learning-based Damage Assessment Applications.", In IEEE ICDCS, 2019. [Top Conference in Systems (Acceptance Rate: 19.6%)].
5. [C] **D.Y. Zhang**, Y. Zhang, M.T. Rashid, X. Li, N. Vance, and D. Wang. "HeteroEdge: Taming The Heterogeneity of Edge Computing System in Social Sensing." In ACM/IEEE IoTDI 2019. [Top IoT conference (Acceptance Rate: 28%)]
6. [C] **D.Y. Zhang**, and D. 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%)].
7. [C] **D.Y. Zhang***, L. Shang*, B. Geng, S. Lai, Ke Li, H. Zhu, M.T. Amin, and D. Wang. "FauxBuster: A Content-free Fauxtography Detector Using Social Media Comments." In 2018 IEEE International Conference on BigData. IEEE, 2018. (Acceptance Rate: 18.9%)
8. [C] **D.Y. Zhang**, L. Song, Q. Li, Y. Zhang, and D. 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%)
9. [C] **D.Y. Zhang**, Y. Ma, CH. Zheng, Y. Zhang, X.S. Hu, and D. 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]
10. [C] **D.Y. Zhang**, Q. Li, H. Tong, J. Bandila, Y. Zhang, and D. 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%)
11. [C] **D.Y. Zhang**, J. Bandila, Y. Zhang, and D. 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%)
12. [C] **D.Y. Zhang**, Y. Zhang, Q. Li, N. Vance, and D. Wang. "Robust State Prediction with Incomplete and Noisy Measurements in Collaborative Sensing." In IEEE MASS 2018, Chengdu, China, 2018.
13. [J] **D.Y. Zhang**, D. Wang, Y. Zhang, N. Vance, and S. 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]
14. [C] **D.Y. Zhang**, Yue Ma, Y. Zhang, S. Lin, X.S. Hu, and D. 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]
15. [C] **D.Y. Zhang**, D. Wang, H. Zheng, X. Mu, Q. Li, and Y. 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%)
16. [C] **D.Y. Zhang**, D. Wang, and Y. 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%)
17. [C] **D.Y. Zhang**, CH. Zheng, D. Wang, D. Thain, C. Huang, X. Mu, and G. 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 Systems. (Acceptance Rate: 16.9%)]
18. [C] **D.Y. Zhang***, R. Han*, D. Wang, and C. 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%)
19. [J] Y. Zhang, **D.Y. Zhang**, and D. Wang. "An Online Reinforcement Learning Approach to Quality-Cost-Aware Task Allocation for Multi-Attribute Social Sensing .", In Pervasive Mobile Computing (PMC), 2019, in press.
20. [J] L. Shang, **D.Y. Zhang**, Michael Wang, and D. Wang. "Towards Reliable Online Clickbait Video Detection:A Content-Agnostic Approach.", In Knowledge-Based Systems (KBS), 2019, in press.
21. [C] Y. Zhang, H. Wang, **D.Y. Zhang**, Y. Lu, and D. Wang. "RiskCast: Social Sensing based Traffic Risk Forecasting via Inductive Multi-View Learning.", In Advances in Social Networks Analysis and Mining (ASONAM), 2019.

22. [C] Y. Zhang, X. Dong, **D.Y. Zhang**, and D. Wang. "A Syntax-based Learning Approach to Geo-locating Abnormal Traffic Events using Social Sensing." In Advances in Social Networks Analysis and Mining (ASONAM), 2019. [Invited Industrial Track]
23. [C] M.T. Rashid*, **D.Y. Zhang***, Zhiyu Liu, Hai Lin, and D. Wang. "CollabDrone: A Collaborative Spatiotemporal-Aware Drone Sensing System Driven by Social Sensing Signals." In IEEE ICCCN, 2019.
24. [C] N. Vance, **D.Y. Zhang**, and D. Wang. "EdgeCache: A Game-theoretic Edge-based Content Caching System for Crowd Video Sharing." In IEEE HPCC, 2019.
25. [C] N. Vance, **D.Y. Zhang**, Y. Zhang, and D. Wang. "Towards Optimal Incentive-driven Verification in Social Sensing based Smart City Applications." In IEEE Smart-City, 2019.
26. [C] M.T. Rashid, **D.Y. Zhang**, and D. Wang. "EdgeStore: Towards an Edge-based Distributed Storage System for Emergency Response." In IEEE Smart-City, 2019.
27. [C] N. Vance, M.T. Rashid, **D.Y. Zhang**, and D. Wang. "Towards Reliability in Online High-Churn Edge Computing: A Deviceless Pipelining Approach." In SmartComp, Washington D.C., USA, June, 2019.
28. [C] Y. Zhang, H. Wang, **D.Y. Zhang**, and D. Wang. "DeepRisk: A Deep Transfer Learning Approach to Migratable Traffic Risk Estimation in Intelligent Transportation using Social Sensing." In DCOSS, 2019. (Acceptance Rate: 25%)
29. [C] Y. Zhang, Y. Lu, **D.Y. Zhang**, L. Shang, and D. 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%)
30. [C] N. Vance, **D.Y. Zhang**, Y. Zhang, and D. Wang. "Privacy-aware Edge Computing in Social Sensing Applications using Ring Signatures." In ICPADS, 2018.
31. [C] Y. Zhang, **D.Y. Zhang**, N. Vance, Q. Li, and D. Wang. "A Light-weight and Quality-aware Online Adaptive Sampling Approach for Streaming Social Sensing in Cloud Computing." In ICPADS, Singapore, 2018.
32. [C] Y. Zhang, **D.Y. Zhang**, Q. Li, and D. Wang. "Towards Optimized Online Task Allocation in Cost-Sensitive Crowdsensing Applications." In IEEE IPCCC, Orlando, Florida, USA, 2018. (Acceptance Rate: 28.8%)
33. [C] Y. Zhang, **D.Y. Zhang**, N. Vance, and D. Wang. "Optimizing Online Task Allocation for Multi-Attribute Social Sensing", ICCCN, Hangzhou, China, 2018.
34. [C] D. Wang, **D.Y. Zhang**, and C. 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%)
35. [C] Y. Zhang, N. Vance, **D.Y. Zhang**, and D. 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.
36. [C] C. Huang, D. Wang, S. Zhu, and **D.Y. 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

1. [D] **D.Y. Zhang**, and D. Wang. "Demo Abstract: Real-time Social Sensing Task Allocation Strategies in Heterogeneous Edge Computing Systems." In IEEE INFOCOM, Paris, France, 2019.
2. [P] **D.Y. Zhang**, Y. Zhang, and D. Wang. "Poster Abstract: A Dynamic Data-Driven Prediction Model for Sparse Collaborative Sensing Applications." In IEEE INFOCOM, Paris, France, 2019.
3. [D] **D.Y. Zhang**, and D. Wang. "Demo Abstract: Heterogeneous Social Sensing Edge Computing System for Deep Learning based Disaster Responses." In ACM/IEEE IoTDI 2019, Montreal, Canada, 2019.
4. [D] **D.Y. Zhang**, J. Bandila, H. Tong, and D. Wang. "An End-to-End Scalable Copyright Detection System for Online Video Sharing Platforms." In ACM/IEEE ASONAM, Barcelona, Spain, 2018.
5. [D] **D.Y. Zhang**, N. Vance, and D. Wang. "Demo Abstract: Real-time Heterogeneous Edge Computing System for Social Sensing Applications." In IEEE RTAS 2018, Porto, Portugal, 2018.
6. [D] N. Vance, R. Mackey, **D.Y. Zhang**, and D. Wang. "Simulating Large-scale Social Sensing based Edge Computing Systems with Heterogeneous Network Configurations.", In IEEE SECON 2018, Hong Kong, China, 2018.

Thesis

- [T] **D.Y. Zhang**. "A cross-site study of user behavior and privacy perception in social networks." Thesis. Purdue University, 2014.

Projects

Human-AI Hybrid Systems for Disaster Response

Dec. 2018 - present

CSE IN UNIVERSITY OF NOTRE DAME

Notre Dame, IN

- Proposing a new human-AI hybrid system that combines the power of deep neural networks and human intelligence from crowd-sourcing platforms.
- Building a CrowdLearn scheme that proven to be effective in leveraging human to significantly improve AI algorithms in disaster damage assessment application.
- **Publications:** IEEE ICDCS'19

Social Sensing based Edge Computing Ecosystem

Aug. 2017 - present

CSE IN UNIVERSITY OF NOTRE DAME

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 **Session Chair**, IEEE/ACM International Conf. on Advances in Social Networks Analysis and Mining (ASONAM 2019)
- 2019 **Invited Reviewer**, IEEE ACCESS
- 2019 **Invited Reviewer**, IEEE Transactions on Knowledge and Data Engineering (TKDE)
- 2019 **Co-Web Chair**, SOCIALSENS 2019: International Workshop on Social Sensing, Montreal, Canada
- 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)
- 2018 **Graduate Recruitment Week Volunteer**, Department of CSE, University of Notre Dame
- 2018 **Student Volunteer**, IEEE International Conference on BigData, Seattle, WA, USA
- 2017 **External Reviewer**, International Conference on Information Processing in Sensor Networks (IPSN 18)
- 2017 **Student Volunteer**, IEEE International Conference on BigData, Boston, MA, USA