

Yi Ding

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RESEARCH INTERESTS

- My research interests lie at the intersection of **cyber-physical systems**, **mobile computing**, and **spatio-temporal data mining**. I am interested in studying human behavior through smartphone sensing and data mining in **cyber-physical systems (CPS)** and **cyber-human systems (CHS)** like *location-based services*, *urban delivery*, and *smart cities*.

EMPLOYMENT

Assistant Professor in Computer Science

University of Texas at Dallas, Richardson, TX, USA

Aug. 2023 - Now

Postdoctoral Associate

Massachusetts Institute of Technology (MIT), MA, USA

Oct. 2022 - Jul. 2023

Advisor: Prof. Alex “Sandy” Pentland (MIT Media Lab, MIT IDSS)

EDUCATION

Ph.D. of Computer Science

University of Minnesota, USA

Advisor: Prof. Tian He (IEEE/ACM Fellow)

Sep. 2016 - Oct. 2022

Visiting Student

Rutgers University, USA

Host: Prof. Desheng Zhang

Feb. 2022 - Oct. 2022

Master of Control Science and Engineering

Zhejiang University, China

Advisor: Prof. Zuhua Xu

Sep. 2013 - Jun. 2016

Visiting Student

IMT Lucca, Italy

Host: Prof. Alberto Bemporad (IEEE Fellow)

Aug. 2015 - Oct. 2015

Bachelor of Control Science and Engineering

Zhejiang University, China

Sep. 2009 - Jun. 2013
with Outstanding Thesis Award

HONORS & AWARDS

- CPS Rising Star, CPS Rising Stars Workshop, University of Virginia, 2022
- Outstanding Paper Award, IEEE RTSS, 2021
- Outstanding Thesis Award, Zhejiang University, 2013

PUBLICATIONS

Highlights: 23 papers, featuring 16 papers in top-tier conferences, including SIGKDD, SIGCOMM, NSDI, MobiCom, UbiComp, RTSS, and VLDB, with 1 outstanding paper award. The authors with * are the students working primarily with me.

Conference Papers

- [C18] **CIKM'24** Guang Yang*, Meiqi Tu, Z. Li, J. Hang, T. Liu, R. Liu, **Yi Ding**, Yu Yang and Desheng Zhang
Behavior-Aware Hypergraph Convolutional Network for Illegal Parking Prediction with Multi-Source Contextual Information
33rd ACM International Conference on Information and Knowledge Management
- [C17] **UbiComp'24** Zhiqing Hong, Zelong Li, S. Zhong, W. Lyu, Haotian Wang, **Yi Ding**, Tian He, Desheng Zhang.
CrossHAR: Generalizing Cross-dataset Human Activity Recognition via Hierarchical Self-Supervised Pretraining
In ACM International Joint Conference on Pervasive & Ubiquitous Computing
- [C16] **UbiComp'24** Zhiqing Hong, Haotian Wang, **Yi Ding**, Guang Wang, Tian He, Desheng Zhang.
SmallMap: Low-cost Community Road Map Sensing with Uncertain Delivery Behavior
In ACM International Joint Conference on Pervasive & Ubiquitous Computing
- [C15] **VLDB'24** Sijing Duan, Feng Lyu, Xin Zhu, **Yi Ding**, H. Wang, Desheng Zhang, Xue Liu, Y. Zhang, Ju Ren
VeLP: Vehicle Loading Plan Learning from Human Behavior in Nationwide Logistics System
International Conference on Very Large Data Bases
- [C14] **SIGSPATIAL'22** Zhiqing Hong, Guang Wang, W. Lyu, B. Guo, **Yi Ding**, H. Wang, S. Wang, Y. Liu, D. Zhang
CoMiner: Nationwide Behavior-driven Unsupervised Spatial Coordinate Mining
ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems
- [C13] **SIGKDD'22** Wei Liu*, **Yi Ding**, Shuai Wang, Yu Yang, Desheng Zhang.
Para-Pred: Addressing Heterogeneity for City-Wide Indoor Status Estimation
195/753=26%
ACM SIGKDD Conference on Knowledge Discovery and Data Mining
- [C12] **UbiComp'22** Baoshen Guo, Weijian Zuo, Shuai Wang, W. Lyu, Z. Hong., **Yi Ding**, Tian He, Desheng Zhang.
WePos: Weak-supervised Indoor Positioning with Unlabeled WiFi for On-demand Delivery
In ACM International Joint Conference on Pervasive & Ubiquitous Computing
- [C11] **MobiCom'22** Pengfei Zhou, **Yi Ding**, Yang Li, Mo Li, Guobin Shen, Tian He.
Experience: Adopting Indoor Outdoor Detection in On-demand Food Delivery Business
16/91=18%
In Annual International Conference on Mobile Computing and Networking
- [C10] **UbiComp'22** **Yi Ding**, Dongzhe Jiang, Yu Yang, Yunhuai Liu, Desheng Zhang, Tian He.
P2-Loc: A Person-2-Person Indoor Localization System in On-Demand Delivery
In ACM International Joint Conference on Pervasive & Ubiquitous Computing
- [C09] **UbiComp'22** **Yi Ding**, Dongzhe Jiang, Yunhuai Liu, Desheng Zhang, Tian He.
SmartLOC: Indoor Localization with Smartphone Anchors for On-Demand Delivery
In ACM International Joint Conference on Pervasive & Ubiquitous Computing
- [C08] **ICPADS'21** Zhigang Dai, Wenjun Lyu, **Yi Ding**, Yiwei Song
OPTI: Order Preparation Time Inference for On-demand Delivery
In IEEE International Conference on Parallel and Distributed System
- [C07] **RTSS'21** Baoshen Guo, Shuai Wang, **Yi Ding**, Guang Wang, Suining He, Desheng Zhang, Tian He.
Concurrent Order Dispatch for Instant Delivery with Time-Constrained Actor-Critic Reinforcement Learning
In IEEE Real-Time Systems Symposium (**Outstanding Paper Award**)

- [C06] Dongzhe Jiang, **Yi Ding**, Hao Zhang, Yunhuai Liu, Tian He, Yu Yang, Desheng Zhang.
UbiComp'21 *ALWAES: an Automatic Outdoor Location-Aware Correction System*
 In ACM International Joint Conference on Pervasive & Ubiquitous Computing
- [C05] **Yi Ding**, Baoshen Guo, Lin Zheng, M. Lu, Desheng Zhang, S. Wang, Sang H. Son, Tian He.
UbiComp'21 *A City-Wide Crowdsourcing Delivery System with Reinforcement Learning*
 In ACM International Joint Conference on Pervasive & Ubiquitous Computing
- [C04] **Yi Ding**, Yu Yang, Wenchao Jiang, Yunhuai Liu, Tian He, Desheng Zhang.
SIGCOMM'21 *Nationwide Deployment and Operation of a Virtual Arrival Detection System in the Wild*
 55/241=22% In the Annual Conference of the ACM Special Interest Group on Data Communication
- [C03] **Yi Ding**, Ling Liu, Yu Yang, Yunhuai Liu, Desheng Zhang, Tian He.
NSDI'21 *A Lifetime Story of a 3-Year-Old Operational Wireless Beacon System in the Wild*
 19/114=17% In USENIX Symposium on Networked Systems Design and Implementation
- [C02] Yu Yang, **Yi Ding**, D. Yuan, G. Wang, X. Xie, Yunhuai Liu, Tian He, Desheng Zhang.
MobiCom'20 *Transparent Indoor Localization with Uncertain Human Participation for Instant Delivery*
 62/384=16% In Annual International Conference on Mobile Computing and Networking
- [C01] Yan Zhang, Yunhuai Liu, **Yi Ding**, G. Li, N. Chen, H. Zhang, Tian He, Desheng Zhang.
UbiComp'19 *Route Prediction for Instant Delivery*
 In ACM International Joint Conference on Pervasive & Ubiquitous Computing

Journal Article

- [J05] Zhiqing Hong, G. Wang, W. Lyu, B. Guo, **Yi Ding**, H. Wang, S. Wang, Yunhuai Liu, Desheng Zhang
TKDE'24 *Nationwide Behavior-Aware Coordinates Mining from Uncertain Delivery Events*
 In IEEE Transactions on Knowledge and Data Engineering
- [J04] Shuai Wang, Baoshen Guo, **Yi Ding**, Guang Wang, Suining He, Desheng Zhang, Tian He
TMC'23 *Time-Constrained Actor-Critic Reinforcement Learning for Concurrent Order Dispatch in On-demand Delivery*
 In ACM Transactions on Mobile Computing
- [J03] Zhigang Dai, Wenjun Lyu, **Yi Ding**, Yiwei Song, Yunhuai Liu
TOSN'23 *OPTI: Order Preparation Time Inference for On-demand Delivery*
 In ACM Transactions on Sensor Network
- [J02] **Yi Ding**, Yu Yang, Wenchao Jiang, Yunhuai Liu, Tian He, Desheng Zhang.
ToN'22 *Nationwide Deployment and Operation of a Virtual Arrival Detection System in the Wild*
 In IEEE/ACM Transactions on Networking
- [J01] **Yi Ding**, Ling Liu, Yu Yang, Yunhuai Liu, Desheng Zhang, Tian He.
ToN'21 *A Lifetime Story of a 3-Year-Old Operational Wireless Beacon System in the Wild*
 In IEEE/ACM Transactions on Networking

PROFESSIONAL ACTIVITIES

Invited Talks

- Invited Talk at the University of North Dakota, U.S., August 2024
- Invited Talk at MIT (Media Lab), U.S., August 2022
- Invited Talk at Kargo (Logistics Startup), U.S., July 2022
- Invited Talk at Location-Based Service Team, ByteDance, China, June 2022
- Invited Talk at Zhongshan Workshop, China Computer Federation (CCF), Nanjing, China, December 2021

Program Committee for Conferences

- ACM SenSys IoT-MMLM Workshop 2024
- ACM MobiCom Picasso Workshop 2024
- The 38th ACM Special Interest Group on Data Communication Posters and Demos (SIGCOMM'24)
- The 24rd International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP 2024)
- The 37th ACM Special Interest Group on Data Communication Posters and Demos (SIGCOMM'23)
- The 23rd International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP 2023)

(External) Reviewer

- Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)
- ACM Transactions on Sensor Networks (TOSN)
- IEEE Transactions on Network Science and Engineering (TNSE)
- IEEE Robotics and Automation Letters (RA-L)
- ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (SIGKDD)

Panelist

- NSF SBIR, 2024
- NSF SCC, 2024

University and Department Service

- CS Department Admission Committee 2023-2024
- CS Department K-12 Outreach Committee 2023-2024

TEACHING

- Fall 2024, Spring 2024: Computer Networks (UTD CS/CE 4390)
- Fall 2023: Special Topics in CS: Data Science for Smart Cities (UTD CS 6301)

MENTORING

- PhD: Ziqi Liu, Xiao Yan
- Master: Pei Zeng
- Informally advised several graduate students on their projects with weekly meetings.

DATA-SET RELEASE

- aBeacon: collected from a citywide physical beacon system, including the data of Bluetooth, manual report, and location from 31,131 couriers at 2,466 merchant locations in one month. [[Link](#)]
- VALID: collected from a nationwide virtual beacon system, including the data of Bluetooth, manual report, and manual feedback from 55,000 couriers at 113,000 merchant locations in ten cities in one month. [[Link](#)]
- RL-Dispatch: collected from a citywide crowdsourcing delivery system, including the on-demand delivery order data in one month. [[Link](#)]
- P2Loc: collected in a encounter-based localization project, including the BLE-based indoor encounter data and reported data of 176 couriers at 54 merchant locations in a mall in one month.. [[Link](#)]

MEDIA EXPOSURE

- MIT Technology Review
- Alibaba Technology

PATENTS

- Embedded MPC method based on convergence depth control [\[Link\]](#)
- Indoor positioning method and apparatus, electronic device and computer readable storage medium. [\[Link\]](#)
- Information processing method and device. [\[Link\]](#)
- Position state acquisition method and device, readable storage medium and electronic equipment. [\[Link\]](#)
- Order processing method and device, storage medium and electronic equipment [\[Link\]](#)
- Beacon association method and device. [\[Link\]](#)
- Task execution method and device based on gesture interaction. [\[Link\]](#)