

# 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 machine learning in **cyber-physical systems (CPS)** and **cyber-human systems (CHS)** like *location-based services*, *urban delivery*, and *smart cities*.

## EMPLOYMENT

**Postdoctoral Associate** Oct. 2022 - Now  
*Massachusetts Institute of Technology (MIT), USA*  
 Advisor: Prof. Alex “Sandy” Pentland (MIT Media Lab, MIT IDSS)

## EDUCATION

**Ph.D. of Computer Science** Sep. 2016 - Oct. 2022  
*University of Minnesota, USA*  
 Advisor: Prof. Tian He (IEEE/ACM Fellow)

**Visiting Student** Feb. 2022 - Oct. 2022  
*Rutgers University, USA*  
 Host: Prof. Desheng Zhang

**Master of Control Science and Engineering** Sep. 2013 - Jun. 2016  
*Zhejiang University, China*  
 Advisor: Prof. Zuhua Xu

**Visiting Student** Aug. 2015 - Oct. 2015  
*IMT Lucca, Italy*  
 Host: Prof. Alberto Bemporad (IEEE Fellow)

**Bachelor of Control Science and Engineering** Sep. 2009 - Jun. 2013  
*Zhejiang University, China* **with Outstanding Thesis Award**

## HONORS & AWARDS

- CPS Rising Star, CPS Rising Stars Workshop, University of Virginia, 2022
- Outstanding Paper Award, IEEE RTSS, 2021
- Novel Patent, Alibaba Group, Local Service Company, 2019
- Outstanding Thesis Award, Zhejiang University, 2013

## PUBLICATIONS

**Highlights:** 17 papers, featuring 13 papers in top-tier conferences, including SIGKDD, SIGCOMM, NSDI, MobiCom, UbiComp, and RTSS, with 1 outstanding paper award.

### Conference Papers

- [C01] **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
- [C02] **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
- [C03] **UbiComp'21** Yi Ding, Baoshen Guo, Lin Zheng, M. Lu, Desheng Zhang, S. Wang, Sang H. Son, Tian He.  
*A City-Wide Crowdsourcing Delivery System with Reinforcement Learning*  
In ACM International Joint Conference on Pervasive & Ubiquitous Computing
- [C04] **SIGCOMM'21** Yi Ding, Yu Yang, Wenchao Jiang, Yunhuai Liu, Tian He, Desheng Zhang.  
*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
- [C05] **NSDI'21** Yi Ding, Ling Liu, Yu Yang, Yunhuai Liu, Desheng Zhang, Tian He.  
*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
- [C06] **SIGKDD'22** Wei Liu\*, Yi Ding\*, Shuai Wang, Yu Yang, Desheng Zhang. (\* = equal contribution)  
*Para-Pred: Addressing Heterogeneity for City-Wide Indoor Status Estimation*  
195/753=26%  
ACM SIGKDD Conference on Knowledge Discovery and Data Mining
- [C07] **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
- [C08] **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
- [C09] **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] **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
- [C11] **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**)
- [C12] **UbiComp'21** Dongzhe Jiang, Yi Ding, Hao Zhang, Yunhuai Liu, Tian He, Yu Yang, Desheng Zhang.  
*ALWAES: an Automatic Outdoor Location-Aware Correction System*  
In ACM International Joint Conference on Pervasive & Ubiquitous Computing
- [C13] **MobiCom'20** Yu Yang, Yi Ding, D. Yuan, G. Wang, X. Xie, Yunhuai Liu, Tian He, Desheng Zhang.  
*Transparent Indoor Localization with Uncertain Human Participation for Instant Delivery*  
62/384=16%  
In Annual International Conference on Mobile Computing and Networking

- [C14] 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

- [J01] 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 Networking
- [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
- [J03] **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

### 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](#)]

### PATENTS

- Order processing method and device, storage medium and electronic equipment [[Link](#)]
- Position state acquisition method and device, readable storage medium and electronic equipment. [[Link](#)]
- Indoor positioning method and apparatus, electronic device and computer readable storage medium. [[Link](#)]
- Information processing method and device. [[Link](#)]

### PROFESSIONAL ACTIVITIES

#### Invited Talks

- 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

#### (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)

**MEDIA EXPOSURE**

- MIT Technology Review
- Alibaba Technology

**TEACHING EXPERIENCE**

As a **Teaching Assistant**:

- Data Communications and Computer Networks (**UMN CSci 4211**)
- Introduction to Machine Learning (**UMN CSci 5521**)

As a **Student Mentor**:

- Informally advised seven graduate students on their projects with weekly meetings.