

# Yu Yang

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## OBJECTIVE

A tenure-track faculty position in a leading research university with a strong CS or ECE program.

## RESEARCH INTERESTS

- Broadly interested in the areas of **big data** and **cyber-physical systems** (CPS) by a technical integration of algorithm, human, and system with emphases on data-intensive urban CPS.
- Focused on the **human behavior analysis and learning** driven by rich data collected from urban CPS and state-of-the-art machine learning techniques; applied learned human behavior knowledge back to optimize and improve CPS.

## EDUCATION

Rutgers University, USA Ph.D. in Computer Science	Sep. 2017 - May 2021 (Expected)
Rutgers University, USA Master of Science in Computer Science	Sep. 2015 - May 2017 <b>with Outstanding Awards</b>
Northeastern University, China Bachelor of Engineering in Software Engineering	September 2015 - May 2017 <b>with Excellent Thesis Award</b>

## EMPLOYMENT

Research Assistant Rutgers University, USA	Sep. 2019 - Present
Research Intern Local Services BU, Alibaba Group	May. 2019 - Sep 2019
Teaching Assistant Rutgers University, USA	Sep. 2017 - May 2019

## HONORS & AWARDS

- UbiComp Community Audience Award for Best-in-Session Presentation, 2020
- Outstanding Publication Award, Rutgers University, 2017
- Outstanding Project Award, Rutgers University, 2017
- Excellent Thesis Award, Northeastern University, 2015
- Excellent Student Scholarship, Northeastern University, 2014
- Excellent Student of Software College, Northeastern University, 2013

## PUBLICATIONS

### Conference Papers

- [1] Ding Yi, Ling Liu, **Yu Yang**, Yunhuai Liu, Tian He, Desheng Zhang.  
**NSDI'21** *A Lifetime Story of a 3-Year-Old Operational Wireless Beacon System in the Wild*  
In the 18th USENIX Symposium on Networked Systems Design and Implementation
- [2] **Yu Yang**, Ding Yi, D. Yuan, G. Wang, X. Xie, Yunhuai Liu, Tian He, Desheng Zhang.  
**MobiCom'20** *Transparent Indoor Localization with Uncertain Human Participation for Instant Delivery*  
In the 26th Annual International Conference on Mobile Computing and Networking
- [3] **Yu Yang**, Zhihan Fang, Xiaoyang Xie, Fan Zhang, Yunhuai Liu, Desheng Zhang.  
**UbiComp'20** *Extending Coverage of Stationary Sensing Systems with Mobile Sensing Systems*  
In the ACM International Joint Conference on Pervasive & Ubiquitous Computing
- [4] Zhou Qin, Fang Cao, **Yu Yang**, Shuai Wang, Yunhuai Liu, Chang Tan, Desheng Zhang.  
**UbiComp'20** *CellPred: A Behavior-aided Scheme for Cellular Data Usage Prediction*  
In the ACM International Joint Conference on Pervasive & Ubiquitous Computing
- [5] **Yu Yang**, Xiaoyang Xie, Zhihan Fang, Fan Zhang, Yang Wang, Desheng Zhang.  
**MobiCom'19** *Enabling Transparent Vehicular Mobility Modeling at Individual Levels with Full Penetration*  
In the 25th Annual International Conference on Mobile Computing and Networking
- [6] Zhihan Fang, **Yu Yang**, Shuai Wang, Boyang Fu, Zixing Song, F. Zhang, Desheng Zhang.  
**UbiComp'19** *Measuring the Impacts of Anomalies on Travel Time of Multiple Transportation Systems*  
In the ACM International Joint Conference on Pervasive & Ubiquitous Computing
- [7] Xiaoyang Xie, **Yu Yang**, Z. Fang, G. Wang, F. Zhang, F. Zhang, Y. Liu, Desheng Zhang.  
**UbiComp'19** *coSense: Collaborative Urban-Scale Vehicle Sensing based on Heterogeneous Fleets*  
In the ACM International Joint Conference on Pervasive & Ubiquitous Computing
- [8] **Yu Yang**, Fan Zhang, Desheng Zhang.  
**UbiComp'18** *SharedEdge: GPS-Free Fine-Grained Travel Time Estimation in State-Level Highway Systems*  
In the ACM International Joint Conference on Pervasive & Ubiquitous Computing
- [9] Ruilin Liu, **Yu Yang**, Daehan Kwak, Desheng Zhang, Liviu Iftode, Badri Nath.  
**UbiComp'17** *Towards Fine-Grained Parking Availability Crowdsourcing Using Parking Decision Models*  
In the ACM International Joint Conference on Pervasive & Ubiquitous Computing

### Journal Articles

- [10] **Yu Yang**, Xiaoyang Xie, Zhihan Fang, Fan Zhang, Yang Wang, Desheng Zhang.  
**TMC'21** *Enabling Transparent Vehicular Mobility Modeling at Individual Levels with Full Penetration*  
IEEE Transactions on Mobile Computing
- [11] Guangjie Han, Li Liu, Sammy Chan, Ruiyun Yu, **Yu Yang**.  
**Comm.'17** *A Hybrid Mobile CrowdSensing Framework for Sensing Opportunities Compensation*  
In the IEEE Communications Magazine
- [12] Ruiyun Yu, **Yu Yang**, Leyou Yang, Guangjie Han, Oguti Ann Move.  
**Sensors'16** *RAQ—A Random Forest Approach for Predicting Air Quality in Urban Sensing Systems*  
In the Sensors

### Conference Posters

- [13] **Yu Yang**, Fan Zhang, Desheng Zhang.  
**SenSys'19** *Vehicular Mobility Modeling based on Heterogeneous Sensor Networks*  
In the 17th ACM Conference on Embedded Networked Sensor Systems

### Under Submission

- [1] **Yu Yang**, Hua Yan, Hao Wang, Zhou Qin, Shuai Wang and Desheng Zhang.  
*Identifying Regional Driving Risks via Transductive Cross-City Transfer Learning Under Negative Transfer*
- [2] **Yu Yang**, Guang Wang, Wenjun Lyu, Y. Zhao, Zheng Yang, Yunhuai Liu, Jie Gao and Desheng Zhang.  
*Modeling Human Exploration Mobility by Cellular Networks from An Evolving Perspective*
- [3] Ding Yi, Ling Liu, **Yu Yang**, Yunhuai Liu, Tian He, Desheng Zhang.  
*A Lifetime Story of a 3-Year-Old Operational Wireless Beacon System in the Wild*

## RESEARCH EXPERIENCE

- **Citywide Food Delivery System with 100 thousand couriers and 7.3 million customers:**
  - **aBeacon [NSDI'21]** describes a **28-month** deployment and operation of **12 thousand** Bluetooth beacon devices in the wild. This work is **deployed** in Eleme, a delivery service company of **Alibaba Group**, to detect couriers' delivery status and supports **64 million** delivery orders.
  - **TransLoc [MobiCom'20]** is the first work of workers' indoor localization based on couriers' **reporting behaviors**. This work is **deployed** in a pilot platform of Eleme.
- **Nationwide Vehicle System with 1.5 million vehicles in 50 cities:**
  - **TransMo** is the first work that infers **regional driving risks** by quantitatively identifying and addressing the negative transfer issue in cross-city transfer learning.
- **Statewide Cellular Network System with 59 thousand users:**
  - **ExMo** is the first work that specifically models human **irregular/exploration mobility** that is of great importance but neglected in the previous work.
- **Statewide Highway System with daily 2 million vehicles:**
  - **Mohen [UbiComp'20]** utilizes the complementary characteristics of heterogeneous sensing systems to extend the sensing coverage of a single sensing system.
  - **VeMo [MobiCom'19]** is the first work infer the locations of vehicles on highways without GPS information based on the drivers' **driving behavior modeling**.
  - **SharedEdge [UbiComp'18]** is the first work infer fine-grained travel time on highways without GPS information based on the drivers' **path selection behavior modeling**.
- **Citywide Heterogeneous Systems with 50 thousand heterogeneous vehicles, 8-line subways, 3 million cellular network users:**
  - **CellPred [UbiComp'20]** is the first work to understand individual cellular data usage pattern based on **mobility patterns** and **data usage behaviors**.
  - **MAC [UbiComp'19]** utilizes various transportation infrastructures and their data for travel time measurement under urban anomalies.
  - **coSense [UbiComp'19]** is the first work to achieve urban-scale vehicle sensing based on heterogeneous fleets and their **mobility patterns**.
- **Campus-wide Parking System with 8 thousand vehicles:**
  - **ParkScan [UbiComp'17]** is the first work to infer the state of the spots not covered by participants' parking/unparking events based on drivers' **parking decision modeling**.
- **Citywide Air Quality Monitoring System with 11 monitoring stations:**
  - **RAQ [Sensors'16]** utilizes the publicly available data to infer the air quality in the city.

## PROJECT & PROPOSAL PARTICIPATION

[1] Socially Informed Services Conflict Governance through Specification, Detection, Resolution and Prevention

PI: Dr. Desheng Zhang

- Performed as the **leading student** to build the data platform in Newark City.
- Participated in the draft of the proposal [**Funded in 2020**].

[2] Adaptable Vehicular Sensing and Control for Fleet-Oriented Systems

PI: Dr. Desheng Zhang

- Conducted research work as the preliminary results for this proposal.
- Participated in the draft of the proposal [**Funded in 2019**].

## INDUSTRY EXPERIENCE

### Research Intern, Alibaba Group

Mentor: Dr. Tian He

- Led the couriers' indoor localization project and deployed the pilot system to support the existing business.
- Worked closely with the *aBeacon* deployment team to operate more than 12 thousand Bluetooth beacons supporting 64 million delivery orders.

## TEACHING EXPERIENCE

As an **Instructor**:

- Technical Communication for Computer Scientists (**Northeastern University, A0809051030**)

As a **Teaching Assistant**:

- Introduction to Computer Science (**Rutgers CS111**)
- Data Structure (**Rutgers CS112**)
- Introduction to Discrete Structures II (**Rutgers CS206**)
- Principles of Programming Languages (**Rutgers CS314**)

## MENTORING EXPERIENCE

### Undergraduate Students:

- Tongle Yao: Working as Software Engineer in Scantist
- Dengpan Yuan: Going to pursue a graduate degree; coauthor of TransLoc in MobiCom'20.
- Maya Ravichandran: Going to pursue a graduate degree.

### Graduate Students (Master)

- Kush Aswani: Working as Software Engineer

## PROFESSIONAL ACTIVITIES

### Invited Talk

- Colloquium in Rutgers Discovery Informatics Institute (*RDI<sup>2</sup>*)
- Twice in CS Conference, Department of Computer Science
- Guest presentation in CS 672: Data Science for Smart Cities

### (External) Reviewer

- Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), ACM Transactions on Sensor Networks (TOSN), ACM Transactions on Cyber-Physical Systems (TCPS), International Conference on Computer Communications and Networks (ICCCN).