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** by a technical integration of algorithm, human, and system with emphases on data-intensive urban systems.
- Focused on the **human behavior analysis and modeling** driven by rich data collected from urban CPS systems and state-of-the-art machine learning techniques.

EDUCATION

Rutgers University, USA — Sep. 2017 - May 2021 (Expected)
Ph.D. in Computer Science

Rutgers University, USA — Sep. 2015 - May 2017
Master of Science in Computer Science — **with Outstanding Awards**

Northeastern University, China — September 2015 - May 2017
Bachelor of Engineering in Software Engineering — **with Excellent Thesis Award**

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

- Ding Yi, Ling Liu, **Yu Yang**, Yunhuai Liu, Tian He, Desheng Zhang.
  From Conception to Retirement: 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 (**NSDI'21**).
- **Yu Yang**, Ding Yi, D. Yuan, G. Wang, X. Xie, Yunhuai Liu, Tian He, Desheng Zhang.
  TransLoc: Transparent Indoor Localization with Uncertain Human Participation for Instant Delivery
  In the 26th Annual International Conference on Mobile Computing and Networking (**MobiCom'20**).
- **Yu Yang**, Zhihan Fang, Xaoyang Xie, Fan Zhang, Yunhuai Liu, Desheng Zhang.
  Extending Coverage of Stationary Sensing Systems with Mobile Sensing Systems for Human Mobility Modeling
  In the ACM International Joint Conference on Pervasive & Ubiquitous Computing (**UbiComp'20**).
- Zhou Qin, Fang Cao, **Yu Yang**, Shuai Wang, Yunhuai Liu, Chang Tan, Desheng Zhang.
  CellPred: A Behavior-aided Scheme for Cellular Data Usage Prediction
  In the ACM International Joint Conference on Pervasive & Ubiquitous Computing (**UbiComp'20**).

- **Yu Yang**, Xaoyang Xie, Zhihan Fang, Fan Zhang, Yang Wang, Desheng Zhang.
  VeMo: Enabling Transparent Vehicular Mobility Modeling at Individual Levels with Full Penetration
  In the 25th Annual International Conference on Mobile Computing and Networking (**MobiCom'19**).
- Zhihan Fang, **Yu Yang**, Shuai Wang, Boyang Fu, Zixing Song, F. Zhang, Desheng Zhang.
  MAC: Measuring the Impacts of Anomalies on Travel Time of Multiple Transportation Systems
  In the ACM International Joint Conference on Pervasive & Ubiquitous Computing (**UbiComp'19**).
- Xiaoyang Xie, **Yu Yang**, Z. Fang, G. Wang, F. Zhang, F. Zhang, Y. Liu, Desheng Zhang.
  coSense: Collaborative Urban-Scale Vehicle Sensing based on Heterogeneous Fleets
  In the ACM International Joint Conference on Pervasive & Ubiquitous Computing (**UbiComp'19**).
- **Yu Yang**, Fan Zhang, Desheng Zhang.
  SharedEdge: GPS-Free Fine-Grained Travel Time Estimation in State-Level Highway Systems
  In the ACM International Joint Conference on Pervasive & Ubiquitous Computing (**UbiComp'18**).
- Ruilin Liu, **Yu Yang**, Daehan Kwak, Desheng Zhang, Liviu Iftode, Badri Nath.
  Your Search Path Tells Others Where to Park: Towards Fine-Grained Parking Availability Crowdsourcing Using Parking Decision Models
  In the ACM International Joint Conference on Pervasive & Ubiquitous Computing (**UbiComp'17**).

Journal Articles

- Guangjie Han, Li Liu, Sammy Chan, Ruiyun Yu, **Yu Yang**.
  HySense: A Hybrid Mobile CrowdSensing Framework for Sensing Opportunities Compensation under Dynamic Coverage Constraint
  In the IEEE Communications Magazine, 2017.
- Ruiyun Yu, **Yu Yang**, Leyou Yang, Guangjie Han, Oguti Ann Move.
  RAQ–A Random Forest Approach for Predicting Air Quality in Urban Sensing Systems
  In the Sensors, 2016.

Conference Posters

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

Under Submission

- **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
  Oct. 2020.
- **Yu Yang**, G. Wang, W. Lyu, Y. Zhao, Zheng Yang, Y. Liu, Jie Gao and Desheng Zhang.
  Modeling Human Exploration Mobility by Cellular Networks from An Evolving Perspective
  Oct. 2020.
- **Yu Yang**, Xaoyang Xie, Zhihan Fang, Fan Zhang, Yang Wang, Desheng Zhang.
  VeMo: Enabling Transparent Vehicular Mobility Modeling at Individual Levels with Full Penetration
  IEEE Transactions on Mobile Computing, 2020.
- 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
  IEEE/ACM Transactions on Networking, 2020.

PROPOSAL PARTICIPATION

Socially Informed Services Conflict Governance through Specification, Detection, Resolution and Prevention, 2020
PI: Dr. Desheng Zhang

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

Adaptable Vehicular Sensing and Control for Fleet-Oriented Systems, 2019
PI: Dr. Desheng Zhang

- Conducted research work as the **base** for this proposal.
- Participated in the draft of the proposal.

RESEARCH EXPERIENCE

Rutgers University

- **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**.

Northeastern University

- **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.

INDUSTRY EXPERIENCE

Research Intern, Alibaba Group
Mentor: Dr. Tian He

- Led the couriers' indoor localization project and deployed the system in the pilot platform 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 purse a graduate degree; coauthor of TransLoc in MobiCom'20.
- Maya Ravichandran: Going to purse a graduate degree.

Graduate Students (Master):

- Kush Aswani: Working as Software Engineer

Professional Activities

Invited Talk

- Colloquium in Rutgers Discovery Informatics Institute (RDI^2)
- 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).

REFERENCES

Desheng Zhang, Assistant Professor (Thesis Advisor)
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Tian He, Vice President, Professor
Alibaba Group, Local Services BU
Department of Computer Science and Engineering, University of Minnesota
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Jie Gao, Professor
Department of Computer Science, Rutgers University
Email: jg1555@cs.rutgers.edu