

Longbiao CHEN

Assistant Professor
Xiamen University, Xiamen, China
Department of Computer Science

Phone: (+86) 134-0074-2847
Email: longbiaochen@icloud.com
Homepage: <https://longbiaochen.com>

Education

- 2015–2018 **Ph.D. Degree, Sorbonne University, France**
Supervisors: Prof. Daqing ZHANG (Fellow, IEEE) and Prof. Thi-Mai-Trang NGUYEN
- 2010–2016 **Ph.D. Degree, Zhejiang University, China**
Supervisor: Prof. Gang PAN
- 2006–2010 **B.E. Degree, Zhejiang University, China**
Chu Kochen Honors College, Computer Science

Research Interests

Domains: Ubiquitous Computing, Urban Computing, Big Data Analytics

Methodologies: Spatio-Temporal Data Mining, Cross-Domain Data Fusion, Mobility Behavior Modeling

Applications: Intelligent Transportation, Emergency Response, Urban Planning

Research Experience

1. Public Transportation System Planning and Management

Planning and managing public transportation systems of a large city is challenging for urban authorities. In this work, we take bike sharing system as an example to explore the potentials of leveraging urban big data to address public transportation challenges. In the bike station planning phase, we identify three important factors related to the bike usage demand of an area, i.e., the POI distributions, the human flow intensities, and the demographic characteristics. We then fuse the corresponding urban big data to model the bike usage demand of each area, and recommend optimal area for placing bike stations. In the bike station management phase, we model the bike usage pattern of each area leveraging relevant urban big data, such as weather conditions and urban events, and predict the station outage (e.g., being empty) to help designing optimal bike balancing strategy between stations. (This work has received **the best paper candidate award of ACM UbiComp'15** and has been accepted by **ACM UbiComp'16**)

2. Container Port Performance Measurement and Comparison

Container ports are the logistics centers of international trade. Being able to measure the port performance is key to port operation and logistics optimization. Traditional port performance data collected from port authorities and shipping companies are usually delayed and vary in granularities, hindering the measurement and comparison of international ports. In this work, we propose a framework to detect ship arrivals in container ports and estimate the number of containers handled by leveraging ship GPS trajectories and port facility parameters. We further derive a set of performance metrics (e.g., terminal productivity and monthly port throughput) to measure and compare the top-100 container ports worldwide. (This work has been published in **ACM UbiComp'14** and **IEEE T-ITS**)

3. Urban Events Detection and Characterization

Urban events (such as festivals and concerts) usually attract large crowds of people, leading to potential traffic congestion, noise pollution, and security risks. In order to better manage these events, urban authorities need to understand the human flow directions, crowd activities, and even crowd sentiment during events. In this work, we fuse human mobility traces (e.g., taxi GPS trajectories) and crowd activity data (e.g., location based social network user check-ins) to automatically detect urban events from the significant and unusual human flow they cause, and characterize the human mobility trends and the crowd activities involved in these events. (This work has been published in **IEEE T-HMS**)

4. Twitting Coffee Machine: A Fusion of Social Network and Internet of Things

With the advances of smart home technologies, an increasing number of home appliances are connected to the Internet. In this work, we take a step forward to connect home appliances to the social network of human. In this way, the working status of these appliances can be monitored through their tweets, and the appliances can be controlled by natural commands. We successfully connect a coffee machine to Sina Weibo, the Chinese Twitter. It gains 30,000 followers within 48 hours, and receives broad media coverage including China Daily. (This work has been published in **IEEE UIC'12**)

Publications

Selected Publications

1. **Longbiao Chen**, Xiaoliang Fan, Leye Wang, Zhiyong Yu, Johnthan Li, Daqing Zhang, Thi-Mai-Trang Nguyen, Gang Pan, Cheng Wang* □ **RADAR: Road Obstacle Identification for Disaster Response Leveraging Multi-Source Urban Data**. The ACM International Joint Conference on Pervasive and Ubiquitous Computing (**Ubicomp'18**), Singapore, 2018. (**Core A***, **CCF-A**)
2. **Longbiao Chen**, Dingqi Yang, Daqing Zhang, Cheng Wang, Jonathan Li, Thi-Mai-Trang Nguyen*. . **Deep Mobile Traffic Forecast and Complementary Base Station Clustering for C-RAN Optimization**. Journal of Network and Computer Applications (**JNCA**), 2018.
3. **Longbiao Chen**, Jérémie Jakubowicz, Dingqi Yang, Zhahui Wu, Daqing Zhang, Gang Pan. **Fine-Grained Urban Event Detection and Characterization Based on Tensor Co-Factorization**. IEEE Transactions on Human-Machine Systems (**T-HMS**), 47(3): 380–391, 2017.
4. **Longbiao Chen**, Daqing Zhang, Leye Wang, Dingqi Yang, Xiaojuan Ma, Gang Pan, Shijian Li, Thi-Mai-Trang Nguyen, Jérémie Jakubowicz. **Dynamic Cluster-Based Over-Demand Prediction in Bike Sharing Systems**. The ACM International Joint Conference on Pervasive and Ubiquitous Computing (**Ubicomp'16**), Heidelberg, Germany, 2016. [**Honorable Mentioned Award**] (**Core A***, **CCF-A**)
5. **Longbiao Chen**, Daqing Zhang, Xiaojuan Ma, Leye Wang, Shijian Li, Zhaohui Wu, Gang Pan. **Container Port Performance Measurement and Comparison Leveraging Ship GPS Traces and Maritime Open Data**. IEEE Transactions on Intelligent Transportation Systems (**T-ITS**), 17(5): 1227–1242, 2016.
6. Dingqi Yang, Daqing Zhang, **Longbiao Chen**, Bingqing Qu. **NationTelescope: Monitoring and Visualizing Large-Scale Collective Behavior in LBSNs**. Journal of Network and Computer Applications (**JNCA**), 55: 170–180, 2015.

7. **Longbiao Chen**, Daqing Zhang, Gang Pan, Xiaojuan Ma, Dingqi Yang, Wangsheng Zhang, Kostadin Kushlev, Shijian Li. Bike Sharing Station Placement Leveraging Heterogeneous Urban Open Data. The ACM International Joint Conference on Pervasive and Ubiquitous Computing (**Ubicomp'15**), Osaka, Japan, 2015. [**Honorable Mentioned Award**] (**Core A***, **CCF-A**)
8. **Longbiao Chen**, Daqing Zhang, Gang Pan, Leye Wang, Xiaojuan Ma, Chao Chen, Shijian Li. Container Throughput Estimation Leveraging Ship GPS Traces and Open Data. The ACM International Joint Conference on Pervasive and Ubiquitous Computing (**Ubicomp'14**), Seattle, USA, 2014. (**Core A***, **CCF-A**)

Other Publications

1. **Longbiao Chen**, Xiaojuan Ma, Thi-Mai-Trang Nguyen, Gang Pan, Jérémie Jakubowicz. Understanding Bike Trip Patterns Leveraging Bike Sharing System Open Data. *Frontiers of Computer Science (FCS)* [Accepted] (IF=0.660, JCR Section IV)
2. Dingqi Yang, Daqing Zhang, **Longbiao Chen**, Bingqing Qu. NationTelescope: Monitoring and Visualizing Large-Scale Collective Behavior in LBSNs. *Journal of Network and Computer Applications (JNCA)*, 55: 170-180, 2015. (IF=1.772, JCR Section III)
3. **Longbiao Chen**, Gang Pan, Shijian Li. Smartphone: Pervasive Sensing and Applications. *Chinese Journal of Computers (CJC)*, 38(2): 423-438, 2015. [In Chinese] (EI Indexed Core Journal)
4. **Longbiao Chen**, Dingqi Yang, Jérémie Jakubowicz, Gang Pan, Daqing Zhang, Shijian Li. Sensing the Pulse of Urban Activity Centers Leveraging Bike Sharing Open Data. The 12th IEEE International Conference on Ubiquitous Intelligence and Computing (**UIC'15**), Beijing, China, August 10-14, 2015. (Core Rank B, CCF Rank C)
5. **Longbiao Chen**, Yaochun Li, Zeming Zheng, Li Zhang, Dan He, Xiaolong Li, Sha Zhao, Shijian Li, Gang Pan. WaterLady: A Case Study for Connecting Physical Devices into Social Networks. The 9th IEEE International Conference on Ubiquitous Intelligence and Computing (**UIC'12**), Fukuoka, Japan, September 4-7, 2012. (Core Rank B, CCF Rank C)
6. **Longbiao Chen**, Jérémie Jakubowicz. Inferring Bike Trip Patterns from Bike Sharing System Open Data. 2015 IEEE International Conference on Big Data (**BigData'15 Poster**), Santa Clara, USA, October 29-November 1, 2015.
7. **Longbiao Chen**, Gang Pan, Shijian Li. Touch-driven Interaction via an NFC-enabled Smartphone. The 10th IEEE International Conference on Pervasive Computing and Communications (**PerCom'12 Workshops**), Lugano, Switzerland, March 19-23, 2012.
8. Yuqiong Xu, Zhiqiang Ye, **Longbiao Chen**, Gang Pan, Shijian Li. TaskShadow-W: NFC-triggered Migration of Web Browsing across Personal Devices. The 2013 ACM International Joint Conference on Pervasive and Ubiquitous Computing Adjunct (**UbiComp'13 Poster**), Zurich, Switzerland, September 8-12, 2013.
9. **Longbiao Chen**, Gang Pan, Shijian Li. Touch-driven Interaction Between Physical Space and Cyberspace with NFC. The 4th IEEE International Conference on Cyber, Physical and Social Computing (**CPSCom'11**), Dalian, China, October 19-22, 2011.

10. Yifan Zhao, **Longbiao Chen**, Chao Teng, Shijian Li, Gang Pan. GreenBicycling: A Smartphone-based Public Bicycle Sharing System for Healthy Life. The 2013 IEEE International Conference on Cyber, Physical and Social Computing (**CPSCoM'13**), Beijing, China, August 20-23, 2013.
11. Sha Zhao, **Longbiao Chen**, Shijian Li, Gang Pan. iCPS_Car: A Paradigm of the Intelligent Cyber-Physical System. The 2013 IEEE International Conference on Cyber, Physical and Social Computing (**CPSCoM'13**), Beijing, China, August 20-23, 2013.

Patents

1. Gang Pan, **Longbiao Chen**, Daqing Zhang, Leye Wang, Shijian Li, Zunkuo Sheng, Biwei Ding. A System and Method for Container Port Throughput Estimation. China Patent CN104240062A.
2. Gang Pan, **Longbiao Chen**, Yuqiong Xu, Zeming Zheng, Yaochun Li, Haoyi Ren, Dan He, Shijian Li. A System and Method for Smart Coffee Machines Based on Internet of Things. China Patent CN102613897A.
3. Gang Pan, **Longbiao Chen**, Zhiqiang Ye, Yuqiong Xu, Shijian Li, Zhaohui Wu. A System and Method for Multimedia Migration in Smart Homes. China Patent CN103442350A.
4. Gang Pan, Zhiqiang Ye, Yuqiong Xu, **Longbiao Chen**, Shijian Li, Zhaohui Wu. A System and Method for Task Migration in Smart Cars. China Patent CN103259848A.

Selected Awards

- 2013–2014 **Huawei First Prize Scholarship**, Zhejiang University Graduate School
- 2012–2013 **Outstanding Contribution Award**, The CCNT Labs, Zhejiang University
- 2011–2012 **Annual Science Award**, Zhejiang Science and Technology Museum
Title: *The Twitting Coffee Machine*
- 2006–2010 **Honors Student**, Chu Kochen Honors College

Research Projects

- 2011–2012 **Participant, National Science and Technology Major Project 2009ZX01038-001-06**
Design and implement a touch-driven media migration framework between smartphones and cars. The framework migrates navigation and music from the phone to the car using NFC technology.
- 2010–2011 **Participant, National 863 Program 2009AA011908**
Design and implement a location-based personalized information provision framework. The framework pushes weather and traffic information to the user based on the location, and recommends tourist attractions and restaurants based on user preferences.
- 2009–2010 **Research Intern, IBM China Development Lab, Shanghai, China**
Study and implement an SOA based enterprise web service internationalization platform.

Teaching Experiences

- 2012–2013 Teaching Assistant, Introduction to Smartphone App Development, Zhejiang University
- 2011–2012 Teaching Assistant, Computer Vision, Zhejiang University
- 2010–2011 Teaching Assistant, Software Architecture and Design Patterns, Zhejiang University

Talks

- 2015 **ACM UbiComp 2015 (Host: Youngki Lee), Osaka, Japan, September 2015**
Title: *Bike-Sharing Station Placement Leveraging Heterogeneous Urban Open Data*
- 2015 **IEEE UIC 2015 (Host: Zhiyong Yu), Beijing, China, August, 2015**
Title: Sensing the Pluse of Urban Activity Centers
- 2015 **SystemX Réunion (Host: Lionel Scremin), Paris, France, July 2015**
Title: *Human Flow Inference on Bike-Sharing Systems*
- 2014 **ACM UbiComp 2014 (Host: Nigel Davies), Seattle, USA, September 2014**
Title: *Container Throughput Estimation Leveraging Ship GPS Traces and Open Data*

Services

Program Committee Member for the 2016 IEEE International Conference on Ubiquitous Intelligence and Computing (**UIC2016**); **Reviewer** for IEEE Transactions on Intelligent Transportation Systems (**T-ITS**), ACM Transactions on Multimedia Computing Communications and Applications (**TOMM**), Springer Personal and Ubiquitous Computing (**PUC**); **Student Volunteer** for the 2011 ACM Conference on Computer Supported Cooperative Work (**CSCW**).

Language Skills

English: Fluent

French: Working knowledge

Chinese: Native speaker