Shuo Liu

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Education

Ph.D	**Computer Science, Georgia Institute of Technology** **Advisor:** Prof. Ling Liu	Aug.2017-Present
Master	**Information and Communication Engineering, Beijing University of Technology** **Advisor:** Prof. Yanhua Zhang, Prof. Pengbo Si	Sep.2014-Jul.2017
Bachelor	**Electronic and Information Engineering, Beijing University of Technology**	Sep.2010-Jul.2014

Research Interests

My research fields are in **WiFi-GPS Localization, Deep Learning for Localization, Middleware Systems**, **Wireless Communications Systems**, **Wireless Sensor Networks and Embedded Systems**.

Publications

[1]. **Shuo Liu**, Pengbo Si, Yu He. "***Edge Big Data-Enabled Low-Cost Indoor Localization Based on Bayesian Analysis of RSS***", 15th IEEE Wireless Communications and Networking Conference(WCNC), San Francisco, CA, Mar. 2017.
[2]. **Shuo Liu**, Pengbo Si, Xiaohan Gao, "***A Rapid Optimization Approach for Anti-jamming of Frequency Hopping System***", 9th IEEE International Conference on Communication Software and Networks(ICCSN), Guangzhou, China, May 2017.
[3]. **Shuo Liu**, Pengbo Si, Yu He. "***A Pinpoint WiFi-Based Localization Using AP Trace-back Algorithm with Micro-LDPL-Model***", Ad Hoc & Sensor Wireless Networks, submitted.
[4]. Yanhua Sun, Susu Lv, **Shuo Liu**, "***Joint User Scheduling and Power Allocation for Massive MIMO Downlink with Two-Stage Precoding***", 2nd IEEE International Conference on Computer and Communications, Chengdu, China, Oct. 2016.
[5]. Yanhua Sun, Susu Lv, **Shuo Liu**, "***Density Based User Grouping for Massive MIMO Downlink in FDD System***", 9th IEEE International Conference on Communication Software and Networks, Guangzhou, China, May 2017.
[6]. Yu He, Pengbo Si, Enchang Sun, Yanhua Zhang and **Shuo Liu**. "***Joint Task Management in Connected Vehicle Networks by Software-Defined Networking, Computing and Caching***", 2017 International Conference on Network and Information Systems of Computers(ICNISC).

Patents

[1]. **Shuo Liu**, Xiaochu Zhang, Pengbo Si, "***Indoor Wireless Positioning Method Based on a WiFi Signal Intensity Simulation and Position Fingerprint Algorithm***", Patent No. 201510729844.5
[2]. Pengbo Si, **Shuo Liu**, Yu He, "***An Indoor Wireless Localization Method Based on Edge Computing and Bayesian Posterior Probability***", Patent No. 201610426115.6
[3]. Pengbo Si, **Shuo Liu**, Yu He, "***WiFi Signal and Micro-LDPL-Model based AP Trace-back Algorithm for Indoor Localization***", Patent No. 201610424454.0
[4]. Yanhua Sun, Susu Lv, **Shuo Liu**, "***Joint User Scheduling and Power Allocation for Massive MIMO Downlink Systems***", submitted.
[5]. Yanhua Sun, Susu Lv, **Shuo Liu**, "***Density Based User Grouping for Massive MIMO***", submitted.

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[1]. Xiaochu Zhang, **Shuo Liu**, "***Indoor localization System Based on the Fingerprint of WiFi***", No.2015SR084036
[2]. Zhaoxin Yang, **Shuo Liu**, Fan Zhang, ***"Data Sampling system for Environmental Monitoring Based on ZigBee"***, No.2016SR094964
[3]. Fan Zhang, **Shuo Liu**, Zhaoxin Yang, "***Terminal Software for Environmental Monitoring Based on Zigbee***", No.2016SR094968
[4]. Huoquan Liang, **Shuo Liu**, Xiao Guo, "***A Software implementing Fusion Algorithm of Heterogeneous Communication Protocol Based on the MAPS-K64 Platform***", No.2016SR094741
[5]. Xiao Guo, **Shuo Liu**, Huoquan Liang, "***A Testing Software for Heterogeneous Communication Protocol Based on C51RF-CC2430***", No.2016SR094625

Research Experience

Research on Multi-Modal Localizations with Deep Learning, Advisor: Prof. Ling Liu **Aug.2017-Present**

- Implement multi-modal sensor process methods to increase the accuracy, efficiency and robustness of localization systems;
- Combine machine learning methods(especially deep learning methods) with conventional fusion methods with multi-modal localizations;
- Build a system for localizations in Gatech with JAVA, Python, and any useful programming languages.

Research on the Environment Monitor System and Cloud Computing Platform Based on the Wireless Sensor Network, Advisor: Prof.Qiang Wu, Prof.Yanhua Zhang, Prof. Pengbo Si **Sep.2015-May.2016**

- Realized the creation of wireless network and the data sampling and sharing on the hardware platform C51RF-CC2430/CC2431;
- Wrote a program using Java language to develop a software on the host computer, which could receive the data from serial

port and display it on the screen;

Research on the Ray-tracing Indoor localization, Advisor: Prof.Yanhua Zhang, Prof. Pengbo Si **Aug.2014-Dec.2014**

- Set up the location fingerprint library of the indoor environment Via the iBuiltNet, based on the ray-tracing, imported this library to the mobile end and employed the modified location fingerprint algorithm to estimate the position.

Research on Indoor Localization System based on the WiFi Signal, Advisor: Prof. Yanhua Zhang, Prof. Pengbo Si **Mar.2014-Jun.2014**

Supported by **the National Natural Science Foundation of China**, No. 61571021

- Programed with Java to construct a wireless localization system, which was based on the WiFi signal, on Android;
- Introduced Edge Computing and Cloud Computing to the localization process, and the system included two ends, host computer(Server) and Android mobile phone(Terminal);
- Proposed and tested several localization algorithms, such as Micro-LDPL Model and Bayesian Analysis, and reached a sound localization result in the practical environment.

Research on the mobile Ad Hoc Network(MANET), Advisor: Prof.Yanhua Zhang, Prof. Pengbo Si **Dec.2013-Feb.2014**

- Built up a wireless communication system based on Zigbee, and, according to the Zigbee2006 protocol, achieved point to point communication, point to multi-points communication, construction of network, and wireless localization;
- Improved the RSSI algorithm to enhance the precision of localization, and programed with Java language to deploy this algorithm on the Android Platform.

Internship Experience

DJI-Innovations **Apr.2015-Aug.2015**

Position: Assistant Engineer, Advisor: Prof. Kebin Jia

- Associated the 19th group of DJI to implement the module verification and the integration testing for the unmanned aerial vehicle.
- Wrote the verification program, including the connection testing of DSP6678, encapsulation of bottom functions and modification of stability, via C, C++ and assembly language in the environment of CCS and VC6.0;
- Wrote the process of integration, including module upgrade, self-maintenance, carriage calculation, and navigation positioning.

Honors

Technology Innovation Prize, Beijing University of Technology **Sep.2012**

First-class Fundamental Scholarship for Master Students, Beijing University of Technology(**TOP 5%**) **Sep.2014**

First-class Scholarship for Academic Excellent Master Students, Beijing University of Technology(**TOP 5%**) **Sep.2015**

"Beichuan" Scholarship for Academic Excellence, Beijing University of Technology(**TOP 5%**) **Dec.2015**

Third-class Prize in the 2013 IEEEXtreme 24-Hour Programming Competition(Rank 254/1838) **Nov.2013**