Yang Liu

https://yangcas.github.io/

Email : yang.liu@mail.sim.ac.cn
Mobile : +86-15026766569

Personal Statement

My name is Yang Liu, a final-year PhD candidate in Communication and Information System at University of Chinese Academy of Sciences(UCAS). My advisor is professor Yang Yang. My project involves mobile interaction, embedded system, wireless localization. Currently, my work focuses on novel mobile interaction technologies using wireless signals, especially acoustic signals. I'm not only focusing on optimizing prior works in more complex ways, but also analyzing the gap between theory and practice, and then proposing new methods inspired by practical experiments for addressing some daunting problems.

Education

- **University of Chinese Academy of Sciences** — Shanghai,China
  Ph.D candidate in Communication and Information System; — *Sep. 2016 – Present*
- **Beihang University** — Beijing, China
  M.S. in Software Engineering; — *Sep. 2013 – Jun. 2016*
- **Anhui University** — Hefei, China
  B.S. in Microelectronics; — *Sep. 2008 – July. 2012*

Research Interests

- **Mobile sensing and ubiquitous computing**: wireless context awareness; human health monitoring, such as walk, fall down and breathing.
- **Mobile interaction**: motion based interaction for mobile users; gesture recognition using inertial sensors and wireless signals.
- **Location Based Services**: fine-grained (dm-level and cm-level) indoor localization using wireless signals, such as sound, Wi-Fi and RFID; SLAM based robot navigation.

Projects

- **Fine-grained Acoustic based Ranging**: A prototype system of fine-grained acoustic ranging could achieve mm-level ranging accuracy and detect small and slow movements, such as monitoring human breathing.
- **PAMT: Phase-based Acoustic Motion Tracking in Multipath Fading Environments**: A prototype system of acoustic motion tracking is implemented on a standard Android smart phone, which allows mobile users to interact with computer by using gesture interface in practical indoor environments. Demo link.
- **Low-Cost Real-Time Power Measurement and Abnormal Diagnosis**: A low-cost and real-time power measurement platform provides a more flexible way for the low-power device development than cumbersome equipment, and diagnoses abnormal status of device based on the real-time power consumption.

Skills

- **Programming**

  Hands-on experience with digital signal processing: audio processing, sonar, radar, array signals processing, signal processing for wireless communication, and Spectral density estimation.
  Basic knowledge of optimization theory, machine learning.

- **Equipment**

  Hands-on experience with common experimental equipment, such as Vector Network Analyzer, Spectrum Analyzer, Programmable Signal Generators, Oscilloscopes, NFC and Wi-Fi Test System.

- **Development platforms and tools**

  Hands-on experience with rapid system prototyping to verify theoretical simulations: Android applications (Android Studio), Windows applications (Visual Studio), FPGA (Modelsim, Quartus II), IoT devices (IAR, MPLAB, SW4STM32, STM32CubeMX, and Keil), Wi-Fi devices (OpenWRT).

Publications

1. **Yang Liu**, Wuxiong Zhang, Yang Yang, Weidong Fang, Fei Qin, and Xuewu Dai, RAMTEL: Robust Acoustic Motion Tracking using Extreme Learning Machine for Smart Cities, IEEE Internet of Things Journal (Under Review).
2. **Yang Liu**, Wuxiong Zhang, Yang Yang, Weidong Fang, Fei Qin, Xuewu Dai, PAMT: Phase-based Acoustic Motion Tracking in Multipath Fading Environments. IEEE Conference on Computer Communications (INFOCOM'19, acceptance rate: 19.7%).
3. **Yang Liu**, Yang Yang, Weidong Fang, Wuxiong Zhang, Demo: Phase-based Acoustic Localization and Motion Tracking for Mobile Interaction. ACM multimedia conference (ACM MM'18).
4. **Yang Liu**, Yubing Wang, Weiwei Gao, Wuxiong Zhang, Yang Yang. A Novel Low-Cost Real-Time Power Measurement Platform for LoWPAN IoT Devices. Mobile Information Systems. 2017. 1-14.
5. Weidong Fang, Wuxiong Zhang, Yang Yang, **Yang Liu**, Wei Chen. A resilient trust management scheme for defending against reputation time-varying attacks based on BETA distribution. Science China Information Sciences, 2017, 60(4):040305.

Patents

1. China Patent *No.*2018103618786: **Yang Liu**, Wuxiong Zhang, Weidong Fang, Weiwei Gao, and Yang Yang, A ranging method, a ranging system and a three-dimensional positioning system based on acoustic phase, filed, Mar. 2018.
2. China Patent *No.*2018111199483: **Yang Liu**, Wuxiong Zhang, Yang Yang, and Weidong Fang. A method and a device for mitigating multipath effect of acoustic signals, filed, Nov. 2018.

Awards

- **ACM SIGMM Student Travel Grant**: ACM Multimedia (ACM MM), 2018
- **Second Prize Award**: National Post-Graduate Mathematical Contest in Modeling, China, 2018
- **Academic Performance Scholarship**: Anhui University, 2009