Sugang Li

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Summary

Ph.D. 5+ years research and industry experience, with strong analytical and prototyping skill in mobile computing, wearable computing, IoT, digital signal processing, applied machine learning. Proficient in Java, Python and Linux.

Education

PH. D | 2014 — 2017 (EXPECTED) | RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY, USA

- Major: Computer Engineering
- Thesis: Future IoT Architecture and Application in Mobile Sensing

MS | 2011 — 2014 | RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY, USA

- Major: Computer Engineering

B.ENG | 2007— 2011 | SOUTHERN MEDICAL UNIVERSITY, CHINA

- Major: Biomedical Engineering (Medical Informatics)

Technical Skills

PROGRAMMING LANGUAGE

- Proficient: Java, Python
- Familiar: C/C++, Bash, PHP, SQL

OPERATING SYSTEMS & TOOLS

- Ubuntu, Android, RIOT, Windows, Eclipse IDE, NS3 Simulator, Visual Studio, GIT, sci-kit learn, TensorFlow.

Experience

GRADUATE ASSISTANT | WINLAB, RUTGERS UNIVERSITY | 06/2012 — PRESENT

Detecting Approaching Cars via Smartphone:

- This sensing technique helps distractive mobile pedestrian users to detect approaching cars
- Invented and evaluated new signal feature for car event detection
- Implemented a comparative HMM-based algorithm that using standard audio feature
- Designed and directed experiments to collect vehicle sound on various outdoor noisy environment
- Built an application on Android platform by using OpenCV Native Library and Android SDK
- Paper accepted by ACM IMWUT/Ubicomp 2017 (acceptance rate: 23%)

Mobile User Speech Profiling via Smartphone:

- This system enables user social activity logging and autistic children monitoring in non-intrusive way
- Designed and evaluated speech profiling algorithm which extracts user's speech percentage in a conversation and surrounding speaker count based on Gaussian Mixture Model
- Designed and conducted experiment to collect conversation audio on mobile users
- Built a system on Android platform and Amazon Web Service server by using Android SDK, LAMP Stack
- Collaborated with AT & T Research Center and Rutgers Psychology Department
- Paper accepted by ACM Ubicomp 2013 (acceptance rate: 23%)

Music-induced Authentication System for Wearables:

- Developed user authentication algorithm to extract users' unique signature based on user's response (head/hand movement) to music
- Designed and Conducted experiment to collect motion sensor data on Google Glass users and attackers
- Implemented the system on Google Glass by using Android Wear SDK
- Paper accepted by IEEE PerCom 2016 (acceptance rate: 12%)

Internet-of-Thing over Future Internet Architecture:

- Developed the IoT system based on Mobilityfirst Future Internet Architecture
- Implemented the packet forwarding module over 802.15.4 protocol on RIOT operating system on embedded device by using C++
- Implemented network simulator by using JDK
- Paper accepted by IoTDI 2016 (acceptance rate: 21%)
- Received the Best Demo Award in CPS-Week 2017 (1/15)

Edge-Cloud Assisted Parallel Computing for Real-time Augmented−Reality Acceleration:

- Led Ph.D. student to identify performance bottleneck in real-time 3D reconstruction from stereo camera
- Supervised Ph.D. student to design parallel computing system in edge clouds to accelerate disparity map calculation from two video streams

RESEARCH INTERN | AT & T LABS RESEARCH, NJ | 06/2016— 08/2016

Efficient Parallel I/O for Distributed Object Storage System:

- Designed efficient I/O for distributed object storage system with parallelized read/write operation
- Simulated large scale parallel I/O network traffic by using JDK
- Reduced the total network traffic by 45% compared exiting implementation
- Implemented I/O protocol over Ceph by using C++

RESEARCH INTERN | HUAWEI RESEARCH CENTER, CA | 01/2014 — 08/2014

Comparative study of Internet-of-Thing over Different Future Internet Architecture:

- Developed the IoT system based on Mobilityfirst Future Internet Architecture
- Implemented MobilityFirst Module in NS3 simulator
- Conducted Experiment to compare network performance of MobilityFirst and NDN in stationary and mobile setting

TEACHING ASSISTANT | ECE DEPT., RUTGERS UNIVERSITY | 09/2012 — 12/2015

Graduate/undergraduate Level Computer Architecture and UX engineering

- Designed course project
- Graded homework, exam and projects
- Held office hour to answer students' questions

Relevant Courses

Digital Signal Processing, Fundamental of Sensors & Application, Principle & Interface Technique of Micro-computer, Database Management, Computer Architecture, Software Engineering, Data Structure and Algorithm, User Experience Engineering & Mobile Systems, Parallel & Distributed Computing, Computer Network, Network Security, Introduction of Probability, Linear Algebra.

Honors/Awards

[1] The Best Demo Awards in IoTDI/CPSWeek 2017
[2] PerCom Student Travel Grant ($1800), 2016
[3] Rutgers ECE Student Travel Grant ($300), 2016
[4] Education Winner, NJ Tech Council Internet of Things Conference, 2015
[5] Webmaster of Rutgers Chinese Student & Scholar Association, 2013

Publications

[1] X. Fan, H. Ding, **S.Li**, M. Sanzari, Y. Zhang, Z. Han, W. Trappe, R. Howard, "Energy-Ball: Wireless Power Transfer for Batteryless Internet of Things through Distributed Beamforming", in ACM **IMWUT/Ubicomp**, 2018. submitted

[2] W. Zhang, **S. Li**, L. Liu, Z. Jia, Y. Zhang, D. Raychaudhuri, "Fast 3D Reconstruction through a Latency Aware Edge Computing Platform", in ACM **SIGMETRICS** 2018. submitted

[3] Z. Jia, A. Bonde, **S. Li**, C. Xu, J, Wang, Y. Zhang, R. E. Howard, and P. Zhang, "Monitoring a Person's Heart Rate and Respiratory Rate During Sleep on a Shared Bed Using Geophones", in ACM **SenSys**, 2017. To appear.

[4] **S. Li**, X. Fan, Y. Zhang, W. Trappe, J. Lindqvist and R. Howard, "Auto++: Detecting Cars Using Embedded Microphones in Real-Time" in ACM **IMWUT/Ubicomp**, 2017.

[5] J. Chen, **S. Li**, H. Yu, Y. Zhang, D. Raychaudhuri, R. Ravindran, H. Gao, L. Dong, G. Wang, and H. Liu. "Exploiting ICN for Realizing Service-Oriented Communication in IoT." *IEEE **ComMag*** 25, 2016.

[6] **S. Li**, J. Chen, H. Yu, Y. Zhang, D. Raychaudhuri, R. Ravindran, H. Gao, L. Dong, G. Wang and H. Liu, "MF-IoT: A MobilityFirst-Based Internet of Things Architecture with Global Reachability and Communication Diversity", in IEEE **IoTDI**, 2016.

[7] **S. Li**, A. Ashok, C. Xu, Y. Zhang, J. Lindqvist, and M. Gruteser, "Whose Move is it Anyway? Authenticating Smart Wearable Devices Using Unique Head Movement Patterns", in IEEE **PerCom**, 2016.

[8] **S. Li**, Y. Zhang, D. Raychaudhuri, and R. Ravindran, G. Wang, Q. Zheng, and L. Dong. "IoT Middleware Architecture over Information-Centric Network", in IEEE **Globecom ICNS workshop** 2015

[9] **S. Li**, Y. Zhang, D. Raychaudhuri, and R. Ravindran. "A comparative study of MobilityFirst and NDN based ICN-IoT architectures", in IEEE Q-ICN Workshop **QShine**, 2014.

[10] C. Xu, **S. Li**, Y. Zhang, E. Miluzzo, and Y. Chen, "Crowdsensing the Speaker Count in the Wild: Implications and Applications", in IEEE **ComMag**, 52(10), pp.92-99, Oct 2014.

[11] C. Xu, **S. Li**, G. Liu, Y. Zhang, E. Miluzzo, Y. Chen, J. Li, and B. Firner. "Crowd++: unsupervised speaker count with smartphones." in ACM **Ubicomp**, 2013.

Professional Services

Reviewer of ACM/IEEE Transactions on Mobile Computing (12 papers), ACM/IEEE Transactions on Service Computing (2 papers), ACM/IEEE Transactions on Sensor Networks (1 paper), ACM Transactions on Networking (2 papers), and ACM Computer Survey (1 paper).