XIAOFAN FRED JIANG

TEL: +1 (212) 853-0687 • E: JIANG@EE.COLUMBIA.EDU • URL: HTTP://FREDJIANG.COM
550 W. 120TH STREET, RM 1008, NEW YORK, NY 10027, USA

EDUCATION

University of California, Berkeley 8/2005-9/2010

- Ph.D. in Computer Science, completed 9/2010
- Dissertation topic: "High-Fidelity Wireless Building Energy Monitoring Architecture"
- M.S. in Electrical Engineering and Computer Science, completed in 12/2007
- Ph.D. Advisor: David E. Culler

University of California, Berkeley 9/2001-12/2004

- B.Sc. in Electrical Engineering and Computer Science, Summa Cum Laude
- Minor in Business Administration, Haas School of Business
- Cumulative GPA 3.8, technical GPA 3.9

WORK EXPERIENCES

Columbia University in the City of New York, New York 7/2015-Present

Assistant Professor (Tenure-track)

- Teaching undergraduate and graduate courses in the School of Engineering (SEAS).
- Director of *Intelligent and Connected Systems Lab*, working on research in the areas of smart and sustainable buildings, mobile and wearable systems, and connected health & fitness.

Co-Chair of Smart Cities Center in the Data Science Institute (DSI)

- Tackling old and new problems in cities; improving the quality of urban living.

Air Scientific Inc., Beijing 7/2014-3/2015

Co-Founder and CTO

- Air Scientific Inc. is a startup incubated by Intel IoT Joint Labs along with angels and strategic investors to commercialize the air-quality monitoring and analytics project.
- Manages the overall operation of a 15-person startup, including research, manufacturing, marketing, and operations.
- First high-density deployment of IoT air-quality monitors in collaboration with the Beijing municipal government to provide data analysis, visualization, and pollution source tracking.

Intel Labs China, Beijing 9/2012-7/2014

Director, Analytics and IoT Research Laboratory

- Manages the Analytics and IoT Research Lab (AIR Lab), with projects in energy and environment, smart manufacturing, wearable and context-aware systems

Chief Architect, China Intel IoT Joint Labs

- Principle Investigator for several research projects, including PAM, VeriCloud, QiLoc, and SmartRetail (detailed descriptions in the PROJECTS section)
- PAM project is successfully incubated into a startup – Air Scientific Inc. by Intel IoT Labs and Chinese Academy of Sciences

- High-profile media exposures including China Central Television (CCTV), People's Daily, and Business Times.

Microsoft Research Asia, Beijing 10/2010-9/2012

Researcher

- Accurate indoor location and geo-fencing based on magnetic-induction
- Human-building-computer interaction
- Wireless and mobile systems
- Real-time occupancy detection and energy tracking
- As team leader, 1 U.S. patent granted, 2 under submission

Google, Palo Alto CA 6/2007-8/2007

Engineering Intern

- Designed scheduling and data exchange protocols of a novel CDMA/TDMA hybrid MAC, optimized for a next generation MIMO-based ultra-wideband PHY, targeted at "C" and "whitespace" TV bands.
- As team member, 4 U.S. patents granted

Arch Rock, San Francisco CA 1/2006-5/2006

Technical Consulting

- Worked on the design and implementation of a low power 802.15.4 to Ethernet bridge node. Designed a prototype and wrote the initial firmware in TinyOS.

Intel Corporation, Santa Clara CA 2/2005-7/2005

Component Design Engineer

- Validation of Baseboard Management Controller (BMC) chip using SpecmanElite and Verilog. Constructed infrastructure to validate interrupts to the embedded ARC microcontroller from internal and auxiliary sources. Validated watchdog, SerialIRQ, GPIO, and several other components.

Xilinx, San Jose CA 1/2004-7/2004

Intern Engineer

- Worked on the Gigabit System Reference Design (GSRD) project for high bandwidth systems. Designed part of the Communication Direct Memory Access Controller (CDMAC). Added coalescing interrupts, timers, support for all byte lengths and byte offsets in memory addressing.
- Designed a system to perform 3:2 video pull-down in hardware using ML300 board. Allowed video to be displayed in a moving window with animated background, using virtually no CPU time. It was used to demonstrate bandwidth and CPU utilizing of GSRD.

RESEARCH PROJECTS

- My research projects at Columbia University can be found at: **http://icsl.ee.columbia.edu/projects/**
- Projects while at UC Berkeley, Microsoft Research Asia, and Intel Labs China: **http://fredjiang.com/projects/**

PUBLICATIONS

- My most recent publications can be found at: **http://icsl.ee.columbia.edu/publications/**
- Google Scholar page: **https://scholar.google.com/citations?user=gTA4aQQAAAAJ&hl=en&oi=ao**

AWARDS AND HONORS

- National Science Foundation (NSF) Graduate Fellowship (GRFP). 8/2006 – 8/2009
- Vodafone-US Foundation Fellows Initiative scholarship for research in wireless communications. 8/2004
- Engineering Joint Console Representative. Eta Kappa Nu (HKN) Electrical Engineering and Computer Science honor society. Berkeley 2002
- MIT Technology Review 35 Under 35 Semi-Finalist. 2017

PATENTS

- US Patent #US 8,396,086 B1: "Scalable Association Scheme for TV White-space MIMO Wireless System". Carroll Philip Gossett, Yuan Yuan, Kevin C. Yu, Xiaofan Jiang, Michial Allen Gunter, Emmanouil Koukoumidise. Google Inc.
- US Patent #US 8,565,138 B1: "Random Shuffling Mechanism for MIMO Wireless System". Yuan Yuan, Kevin C. Yu, Emmanouil Koukoumidise, Xiaofan Jiang, Michial Allen Gunter, Carroll Philip Gossett. Google Inc.
- US Patent #US 8,699,411 B1: "Dynamic TDMA System for TV White Space MIMO Wireless". Carroll Philip Gossett, Yuan Yuan, Kevin C. Yu, Emmanouil Koukoumidise, Xiaofan Jiang, Michial Allen Gunter. Google Inc.
- US Patent #US 8,559,455 B1: "Dynamic Scheduling Scheme for TV White-space MIMO Wireless System". Yuan Yuan, Kevin C. Yu, Carroll Philip Gossett, Michial Allen Gunter, Xiaofan Jiang, David James Carmichael. Google Inc.
- US Patent Application, Pub No. US 2013/0073681 A1: "Creating Interactive Zones", Xiaofan Jiang, Chieh-Jan Mike Liang, Jeff Hsu, Caiquan Liu, Jie Liu, Feng Zhao. Microsoft

TEACHING EXPERIENCE AND SELECTED TALKS

- **Columbia University**, New York 2015 – Present
  Created and taught Columbia's first undergraduate course on Internet-of-Things (IoT)

- **Singapore Nanyang Technological University**, Singapore 2018
  Chinese University of Hong Kong, Hong Kong 2018
  Hong Kong Polytechnic University, Hong Kong 2018
  Seminar: Intelligent and Connected Systems for Sensible Urban Living
- **Carnegie Mellon University**, Pittsburg 2015
  Seminar: Bringing Together Internet-of-Things with Physical Analytics
- **University of Michigan at Ann Arbor**, Ann Arbor 2014
  Invited Talk: Air-Quality Monitoring and Data Analytics
- **Intel Developers Forum (IDF)**, Shenzhen 2014
  Talk: End-to-end Internet of Things Solutions on Intel® Architecture
- **First Workshop on Internet of Things Applications,** Beijing 2012
  Keynote: Intelligent Modules for Building Internet-of-Things
- **Intl. Conference on Human Probes and Smartphone Sensing**, Chiang Mai, 2011
  Keynote: People-centric Sensing – from Smartphones to Smartplaces
- **National Taiwan University**, Taipei 2011
  Lecture: Bridging the Gap between Humans and the Physical World – A Step Toward Reducing Energy Consumption and Increasing Comfort
- **CCF Advanced Disciplines Lectures**, Beijing 2011
  Lecture: Internet of Humans and Things: Connecting Humans to the Physical World with Virtual Zones
- **Emerging CPS Applications Workshop**, Stockholm, 2010
  Rethinking the Energy Infrastructure from a Cyber-Physical Perspective
- **Lawrence Berkeley National Laboratory**, Berkeley 2008
  Expediting Home Energy Conservation through Innovative Marketing and the Web 2.0 Community
- **University of California, Berkeley**, Berkeley, California
  Graduate Student Instructor for "CS61CL: Machine Structures" (Fall Semester 2008), taught by Professor David Culler, Computer Science Division
- **University of California, Berkeley**, Berkeley, California
  Guest Lecturer for "EECS152: Computer Architecture and Engineering"
  Title: Virtualization (topics include VMM, memory sharing, VTx, Xen VM, VMware ESX)

PROFESSIONAL SERVICES

- Steering Committee Chair, ACM BuildSys
- TPC co-Chair, ACM BuildSys '14, IoT Expo '16, IEEE SCIE '17, ICCCN '17 HoT
- Guest Editor, IEEE Pervasive Computing SI on IoT Communications, 2018
- Guest Editor, ACM Transactions on Sensor Networks SI on Smart and Efficient Built Environments, 2018
- Co-Chair, PhD Forum/Doctoral Colloquium at SenSys 2017

- Publication Chair, ACM SenSys '16, ACM BuildSys '16
- Publicity Chair, ACM SenSys '12, ACM EWSN '16
- Demo Chair, ACM BuildSys '11, ACM/IEEE IPSN '12, ACM/IEEE IPSN '16, ACM SenSys '16
- Web Chair, ACM SenSys '10, '11
- Poster Chair, ACM BuildSys '11

- TPC Member:
  - SenSys '13, '14, '15, '16, '17, '18
  - MobiSys '14
  - Physical Analytics '14
  - MobiCASE '14
  - ASPLOS '14 (external reviewer)
  - RTAS '13
  - DCOSS '13, '14, '15, '16
  - E-Energy '15
  - EWSN '11, '13
  - BuildSys 10, '12, '13, '17, '18
  - HotPower '12
  - IPSN 11', '12, '18
  - IoTDI '17, '18
  - HotMobile '16

BACKGROUND AND SKILLS

- Wireless sensor networks, Internet-of-Things (IoT), and cyber-physical systems
- Human-building-computer interactions and building energy
- Mobile and embedded systems
- Signal processing, system design, control systems, wireless communications
- Digital components and design, FPGA design
- Analog design, integrated circuits, mixed signal design
- Sensors and actuators design, digital-analog interfacing
- RESTful design, IPv6/6LowPAN
- Database systems, PostgresSQL, MySQL, MongoDB
- C, C++, JAVA, Verilog, EDK, PHP, Perl, Python, SPICE, Matlab, Assembly, ModelSIM, Javascript, Scheme, Linux, TinyOS
- Fluent in spoken and written Chinese

PROFESSIONAL SOCIENTY MEMBERSHIP

- Association for Computing Machinery (ACM)
- Institute of Electrical and Electronics Engineers (IEEE)