# Fenggang WU


CONTACT INFORMATION

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## EDUCATION

**University of Minnesota Twin Cities**, MN, U.S.
**Ph.D.** of *Computer Science and Engineering* Sept. 2013 – Jun. 2018(expected)
- Advisor: David H.C. Du

**Shanghai Jiao Tong University**, Shanghai, China
**M.S.** of *Computer Science and Engineering* Sept. 2010 – Mar. 2013
- Advisor: Min-You Wu
- Thesis: Service Directory Selection in Service Discovery of Vehicular Ad-hoc Networks

**B.S.** of *Computer Science and Engineering* Sept. 2006 – Jun. 2010
- Thesis: Coverage Problem by Wireless Sensor Networks in Cave Scenario
- Thesis Advisor: Min-You Wu

## ACADEMIC APPOINTMENTS

**University of Minnesota, Twin Cities**, MN, U.S.
**Research Assistant** Sept. 2013 – Now
- Computer Science and Engineering
- Advisor: David H.C. Du

**Singapore University of Technology and Design**, Singapore
**Research Assistant** Mar. 2013 – Jun. 2013
- Pillar of Information System Technology and Design
- Advisor: Jason Gu

## PUBLICATIONS

**F. Wu**, H. Zhu, J.-L. Lu, M.-Y Wu, "DEBUT: Delay Bounded Service Discovery in Urban Vehicular Networks", in Proc. *IEEE Wireless Communications and Networking Conference (WCNC'13)*, Shanghai, China, Apr. 2013.

**F. Wu**, H. Zhu, J.-L. Lu, M.-Y Wu, "On Optimal Service Directory Selection in Urban Vehicular Networks", in Proc. *ACM CoNEXT Workshop on Urban Networking (UrbaNE'12)*, Nice, France, Dec. 10, 2012.

C. Liu, J. Lu, L. Kong, **F. Wu**, Q. Wu, M.-Y. Wu, "Software-Based Green Proxy System for Wireless Networks", *Journal of Software*, 2012,23(2):215–229. [PDF in Chinese]

## INDUSTRIAL EXPERIENCES

**Page Fault Based Snapshot for Persistent Memory Systems**
*Hewlett-Packard Enterprise* May. 2015 – Aug. 2015
- Design an in-memory FS snapshot mechanism for Persistent Memory Systems to speed up the FS snapshot efficiency by avoiding the expensive disk I/Os.
- Implement a prototype system based on *Linux kernel 4.1.0* by adding a new *snapshot* system call and modifying the *Copy-on-Write* page fault handling routine.
- Conduct performance evaluation on the prototype system, showing the efficiency improvement.

## RESEARCH EXPERIENCES

**Shingled Magnetic Recording (SMR) Friendly File System Design**
*University of Minnesota, Twin Cities* Dec. 2014 – Now
- Design File System to accommodating the update amplification feature for Singled Magnetic Recording (SMR), considering robustness and performance.
- Identify design issues that are unique for SMR: free space management and garbage collection. Propose file continuity aware space allocation and super-zone summary based garbage collection scheme to solve the issues respectively.

- Implementing prototype SMR friendly file system by modifying XFS. Evaluation in progress.

**Research on Optimal Selection of Service Directories in Urban VANETs**
*Shanghai Jiao Tong University* Sept. 2011 – Oct. 2012

- Modeled the service directory selection problem in VANETs into an optimization problem and proved its NP-Completeness.
- Analyzed the set of vehicles that can meet the service directory vehicles within the required delay bound. Revealed that the size of this set follows a normal distribution by theoretical deduction and data mining. Designed heuristic iterative algorithm based on the analysis.
- Conducted extensive trace driven simulation on a dataset of the GPS traces of over 4,000 taxis and showed the advantage of our algorithm over alternative ones.

**Research on Information Retention in Vehicular Ad-hoc Networks**
*Singapore University of Technology and Design* Mar. 2013 – Jun. 2013

- Develop an application that can retain location based information (safety related road condition) in vehicular ad-hoc networks.
- Carried out extensive simulation to show the efficiency of our protocol over existing protocols in terms of information retention rate.

## Project Experiences

**Linux ext2 File System Implementation**
*Shanghai Jiao Tong University* Feb. 2009 – Jun. 2009

- Built a simplified ext2 file system on top of a block device simulator.
- Implemented the functionality of super block, inode (including direct, indirect and double indirect blocks), the directory structure and dynamic data allocation.

**Relational Database Management System Implementation**
*Shanghai Jiao Tong University* Sept. 2009 – Dec. 2010

- Led a team to built a relational data base management system.
- In charge of the implementation of the following layers: disk and file management (using file system as underlying storage, exposing block interface), memory management (buffer pool, caching), transaction management (concurrency control, recovery management), record management (interpret between disk blocks and DB records) and DB matadata management (table metadata, DB statistics, etc.).

**Green Proxy System (Collaborate with Intel)**
*Shanghai Jiao Tong University* Sept. 2010 – Sept. 2011

- Collaborated with team members to construct a proxy framework that will make the wireless devices to hibernate for power-saving while keeping the services accessible by building virtual NICs and virtual images for the devices on the proxy server.
- Implemented IP phone application in MFC and Web Camera application in C# to test the power saving and service hosting performance of the Green Proxy system.

## Academic Honours and Awards

**Second Prize** in National Graduate Mathematic Contest in Modeling of China 2011

Shanghai Outstanding Graduate (**5% out of all Shanghai Graduates**) 2010

Kwang-Hua Schloarship, Academic Excellence Scholarship of Shanghai Jiao Tong University (**B-level**) 2009

Samsung Scholarship (**1 out of 600**), Academic Excellence Scholarship of Shanghai Jiao Tong University (**B-level**) 2008

Baosteel Education Scholoarship (**2 out of 600**) 2007

SJTU Scholarship for Excellent Freshman (**23th in 170,000** College Entrance Examinees) 2006

## Technical Skills

**Programming Language / Platforms**

| | | |
|---|---|---|
| C | Java | Linux Kernel Development |
| C++ | Python | File System |
| C# | SQL | Memory Management |