

Suwen Zhu

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EDUCATION

Stony Brook University, Stony Brook, NY August 2013 - December 2019 (expected)
PhD Candidate, Computer Science, GPA: 3.74/4.0
Develop intelligent interactive techniques and systems for touch surfaces. *Advisor:* Prof. Xiaojun Bi

Central University of Finance and Economics, Beijing, China September 2009 - July 2013
B.Eng., Computer Science, GPA: 95/100 (Rank 1/32), Honor Graduate of Beijing

EXPERIENCE

Research Assistant August 2016 - Present
Human-Computer Interaction Lab, Stony Brook University, advised by Prof. Xiaojun Bi, *Stony Brook, NY*

Software Engineering Intern May 2016 - September 2016
Google, Android UX/Research, supervised by Xiaojun Bi and Shumin Zhai, *Mountain View, CA*

Research Assistant January 2014 - December 2015
RIS3 Lab, Stony Brook University, advised by Prof. Long Lu, *Stony Brook, NY*

PUBLICATIONS

- [7] **Suwen Zhu**, Jingjie Zheng, Shumin Zhai, Xiaojun Bi. i'sFree: Eyes-Free Gesture Typing via a Touch-Enabled Remote Control. 2019 CHI Conference on Human Factors in Computing Systems (CHI '19).
- [6] **Suwen Zhu**, Tianyao Luo, Xiaojun Bi, and Shumin Zhai. Typing on an Invisible Keyboard. 2018 CHI Conference on Human Factors in Computing Systems (CHI '18).
- [5] Qi Sun, Anjul Patney, Li-Yi Wei, Omer Shapira, Jingwan Lu, Paul Asente, **Suwen Zhu**, Morgan Mcguire, David Luebke, and Arie Kaufman. Towards Virtual Reality Infinite Walking. SIGGRAPH 2018.
- [4] Ryan Qin*, **Suwen Zhu**, Yu-Hao Lin, Yu-Jung Ko, and Xiaojun Bi. Optimal-T9: An Optimized T9-like Keyboard for Small Touchscreen Devices. 2018 ACM International Conference on Interactive Surfaces and Spaces (ISS '18). (* Ryan Qin is a high-school student supervised by Suwen Zhu.)
Best Paper Honorable Mention
- [3] Jian Xu, **Suwen Zhu**, Aruna Balasubramanian, Xiaojun Bi, and Roy Shilkrot. Ultra-Low-Power Mode for Screenless Mobile Interaction. In Proceedings of the 31st Annual ACM Symposium on User Interface Software and Technology (UIST '18).
- [2] Yu-Hao Lin, **Suwen Zhu**, Yu-Jung Ko, Wenzhe Cui, and Xiaojun Bi. Why Is Gesture Typing Promising for Older Adults?: Comparing Gesture and Tap Typing Behavior of Older with Young Adults. In Proceedings of the 20th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '18).
- [1] **Suwen Zhu**, Long Lu, and Kapil Singh. CASE: Comprehensive Application Security Enforcement on COTS Mobile Devices. In Proceedings of the 14th Annual International Conference on Mobile Systems, Applications, and Services (MobiSys '16).

RESEARCH PROJECTS

Intelligent command input with machine learning. July 2018 - present

- Proposed a machine learning-based principle to improve command input accuracy.
- Developed models and applied the principle to pointing and gesture command interfaces.
- Applied natural language processing techniques to develop intelligent text entry systems.

Assistive interaction systems.

May 2017 - present

- Modeled the typing behaviors of young and older adults and analyzed its implications on keyboard design.
- Conducted semi-structured interviews with older adults to understand how to improve the keyboard decoding and interface design for them.
- Jointly designed eye gaze-based interaction systems for ALS patients on the iOS platform, which supports the needs of both patients and caregivers, including speaking, writing, and using a phone.

Redirected walking in VR.

September 2017 - February 2018

- Conducted perceptual studies on redirected walking in virtual reality: a system which leverages saccadic suppression to change VR users' walking paths without being noticed.

Computational layout design for multi-key keyboards.

July 2017 - September 2018

- Jointly designed and developed an optimization framework for multi-key keyboard layout design.
- Implemented the optimal layout on watch-size devices and conducted empirical evaluation.

Eyes-free interaction on remote displays.

April 2017 - December 2018

- Studied users' eyes-free interaction behaviors on remote displays (e.g., TVs, VR/AR).
- Designed algorithms to support a gesture-based text entry system, informed by previous observations.
- Developed and evaluated the system with novice and expert users with empirical studies.

Touchscreen keyboard with invisible or screen-less interfaces.

May 2016 - August 2018

- Empirical studied users' typing patterns on keyboards with various levels of visibility.
- Explored the design space invisible and partially invisible keyboards.
- Developed the UI and decoding algorithms of an invisible touchscreen keyboard and conducted a longitudinal study for performance evaluation.
- Redesigned the keyboard layout and incorporated gesture triggers to support text entry without visual feedback, which exhibits significant power savings.

Module-level security enforcement for Android applications.

January 2014 - December 2015

- Conducted a comprehensive analysis of security violations caused by malicious modules within applications.
- Designed and implemented the defense mechanism by mediating all cross-module interactions.
- Developed a patching tool that injects developer-defined security policies into complied app packages.

SKILLS

Programming skills: Java, Python, C++, SQL, PostgreSQL, R, C#, XML, JavaScript, HTML, CSS, Matlab**Systems and tools:** Linux, Android, Windows, Git, Unity Engine, Google cloud platform, Gradle, L^AT_EX**AWARDS**

Best Paper Honorable Mention, ACM ISS '18

2018

Stony Brook Computer Science Fellowship, Stony Brook University

2013-2014