

# Qingqing Cao

330, Computer Science, Stony Brook University, NY 11790  
qicao@cs.stonybrook.edu

## Education

---

### **Stony Brook University**

*Ph.D. Candidate, Department of Computer Science*

Advisor: Prof. Aruna Balasubramanian

Stony Brook, New York, United States

Aug. 2015 - Present

### **Wuhan University**

*B.Eng. in Computer Science & Tech, Computer School*

Wuhan, Hubei, China

Sept. 2011 - June 2015

## Research Interests

---

**Mobile Systems and Ubiquitous Computing**

## Honors and Awards

---

MobiSys 2017 Student Travel Grant Award 2017

Special CS Department Chair Fellowship 2015

**Meritorious Winner** in the Mathematical Contest in Modeling (MCM) 2014

## Publications

---

1. Jian Xu (co-primary), **Qingqing Cao (co-primary)**, Aditya Prakash, Aruna Balasubramanian, and Don Porter. “UIWear: Easily Adapting User Interfaces for Wearable Devices”, Proceedings of the 23rd ACM Annual International Conference on Mobile Computing and Networking, **MobiCom 2017**.
2. Jian Xu (co-primary), **Qingqing Cao (co-primary)**, Aditya Prakash, Aruna Balasubramanian, and Don Porter. “UIWear: Easily Adapting User Interfaces for Wearable Devices”, Proceedings of the 23rd ACM Annual International Conference on Mobile Computing and Networking, **MobiCom 2017 Demo**. Link: <https://youtu.be/YEQ3HNeQnts>
3. **Qingqing Cao**, Niranjan Balasubramanian, Aruna Balasubramanian, “MobiRNN: Efficient Recurrent Neural Network Execution on Mobile GPU”, 1st International Workshop on Embedded and Mobile Deep Learning, **EMDL 2017**(colocated with MobiSys).

## Research Experience

---

### **PrIA: Private Intelligent Assistance**

Present

PrIA is a local intelligence assistance system for mobile devices that greatly improve privacy compared to existing systems including question answering, news recommendation etc.

(Paper under preparation)

- \* Ported end to end question answering systems to mobile devices with GPU support.
- \* Optimized question answering performance for mobile platforms by **26x**.

**Mobile Deep Learning Accelerator Project** (Mentor: Nic Lane) Jul. 2017 - Sept. 2017  
During this summer intern, I studied the performance of running deep learning models on the Movidius Neural Compute Stick accelerator and implemented typical model optimization techniques for the accelerator platform.

**MobiRNN: Efficient Recurrent Neural Network Execution on Mobile** Mar. 2017 - Jun. 2017  
MobiRNN is a mobile specific optimization library for RNNs that focusses on offloading deep learning tasks to the mobile GPU.

**UIWear: virtualizing the smartphone UI to wearable devices** Jan. 2016 - Dec. 2016  
UIWear is a “write once and extend to many” programming framework for wearable devices that enables the user to use smartphone applications from any of their wearable devices.

- \* Developed I/O multiplexing mechanism to enable multi-device user interaction. Created UI metaprogram to automatically build companion apps for wearables like smartwatch with minimal developer effort.
- \* Optimized UIWear protocol (for UI data cross-device communication and rendering) and improved latency by **27%** compared to existing systems.
- \* Implemented UIWear system on Android Phone and Watch.

## Course Projects

---

**ActivityNet: large scale activity recognition in videos** Feb. 2016 - May 2016  
This project aims to detect and label both high-level and goal-oriented activities from user generated videos.

- Applied data processing techniques and machine learning algorithms for activity feature extraction and classification
- Implemented computer vision techniques from well-known research papers and developed learning programs on cloud servers for efficient computation

**SBUnix: a simple preemptive operating system kernel** Sept. 2015 - Dec. 2015  
The goal is to implement a simple operating system kernel.

- Implemented Virtual Memory Management and process scheduling
- Implemented several key system calls, stdlib functions, binaries and a minimal working shell

## Courses and Skills

---

- Courses:  
Analysis of Algorithms (CSE548), Operating Systems (CSE506),  
Machine Learning (CSE512), Fundamentals of Computer Networks (CSE534),  
Artificial Intelligence (CSE537)
- Skills:  
Java, Android, C, Python.