

# Qingqing Cao

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## Education

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<b>Stony Brook University</b> <i>Ph.D. Candidate, Department of Computer Science</i> Advisor: Prof. Aruna Balasubramanian	Stony Brook, New York, United States Aug. 2015 - Present
<b>Wuhan University</b> <i>B.Eng. in Computer Science &amp; Tech, Computer School</i>	Wuhan, Hubei, China Sept. 2011 - June 2015

## Research Interests

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**Mobile Systems and Ubiquitous Computing**

## Honors and Awards

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MobiSys Committee	MobiSys 2017 Student Travel Grant Award	2017
Stony Brook University	Special CS Department Chair Fellowship	2015
Ministry of Education of the P.R.C	National Scholarship ( <b>top 2%</b> )	2013
	National Endeavor Fellowship ( <b>top 4%</b> )	2012, 2014
Consortium for Mathematics and Its Applications (COMAP)	<b>Meritorious Winner</b> in the Mathematical Contest in Modeling (MCM)	2014

## Publications

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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. **Qingqing Cao**, Niranjana 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

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**PrIA: Private Intelligent Assistance** June 2016 - 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 question answering systems to mobile devices with GPU support and modeling the trade-offs for NLP tasks using deep learning approaches.

- \* Optimized question answering pipeline for mobile platforms and improved performance(QA-delay time) by **46.8%**.

**MobiRNN: Efficient Recurrent Neural Network Execution on Mobile** Mar. 2017 - Present  
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.  
(Paper under submission)

- \* 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

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**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

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