

Qiaobin Fu

CONTACT INFORMATION	Computer Science Department, Boston University, 111 Cummington Mall Rm 138, Boston, MA 02215	<i>Mobile:</i> +1 (617) 396 - 0510 <i>E-mail:</i> qiaobinf@bu.edu
RESEARCH INTEREST	Computer networking, XIA, high-speed networking, cloud computing	
EDUCATION	<i>Ph.D. candidate in Computer Science</i> Boston University (BU), Boston, MA	Sept. 2014 to Present
	<i>M.S. in Computer Science</i> University of Chinese Academy of Sciences (UCAS), Beijing, China	Sept. 2011 to Jul. 2014
	<i>B.E. in Software Engineering</i> Dalian University of Technology (DUT), Dalian, China	Sept. 2007 to Jun. 2011
SELECTED PUBLICATIONS	<ol style="list-style-type: none">[1] Tong Yang, Alex X. Liu, Muhammad Shahzad, Yuankun Zhong, Qiaobin Fu, Zi Li, Gaogang Xie, and Xiaoming Li. “A Shifting Bloom Filter Framework for Set Queries.” In <i>Proceedings of the 42th International Conference on Very Large Data Bases (VLDB)</i>, Vol. 9, New Delhi, India, September, 2016.[2] Tong Yang, Gaogang Xie, Yanbiao Li, Qiaobin Fu, Alex X. Liu, Qi Li and Laurent Mathy. “Guarantee IP Lookup Performance with FIB Explosion.” In <i>Proceedings of the ACM SIGCOMM Conference (SIGCOMM)</i>, Chicago, August, 2014.[3] Tong Yang, Alex X. Liu, Qiaobin Fu, Dongsheng Yang, Steve Uhlig, Xiaoming Li. “Fit the Elephant in a Box - Towards IP Lookup at On-chip Memory Access Speed.” To appear in <i>IEEE ICNP 2016</i>, Poster.	
TALKS AND PRESENTATION	<ol style="list-style-type: none">[1] Qiaobin Fu. “Alibi Routing”. Presented at the Boston University Network Reading Group, Boston University, October 13, 2015. Paper originally published in SIGCOMM 2015 by Dave Levin et al.[2] Qiaobin Fu, Michel Machado, and John W. Byers. “Worldwide Mentorship on Linux XIA via Google Summer of Code”. Poster presented at FIA Project Meetings, MIT, June 2, 2015.[3] Qiaobin Fu. “A Faster Bloom Filter: Less Overhead, Similar False Positive Rate”. Poster presented at the Computer Science Department Corporate Partners Day, Boston University, March 20, 2015.[4] Qiaobin Fu. “Cuckoo Filter: Practically Better Than Bloom”. Presented at the Boston University Network Reading Group, Boston University, February 23, 2015. Paper originally published in CoNEXT 2014 by Bin Fan et al.[5] Qiaobin Fu. “Guarantee IP Lookup Performance with FIB Explosion”. Presented at the Boston University Network Reading Group, Boston University, September 15, 2014.[6] Qiaobin Fu. “Guarantee IP Lookup Performance with FIB Explosion”. Presented at the ACM SIGCOMM conference, Chicago, Illinois, August 19, 2014.	
RESEARCH AND PROJECT	Graduate Research Assistant @ Boston University XIA: eXpressive Internet Architecture Prof. John W. Byers • Participated in the eXpressive Internet Architecture (XIA) project	

- Conducted research on DDoS defense schemes, and work on the research project Gatekeeper: The design, implementation, and deployment of a network capability system. It is the first open source DoS protection system based on DPDK
- Investigated and conducted experiments on hash table algorithms for mapping XID types to loaded principals
- Extended Open vSwitch (OVS) to support XIA, and built a network marketplace with XIA
- Investigated memory prefetching techniques to accelerate networking applications
- Investigated data streaming algorithms to black hole the overloading destinations
- Mentored the GSoC 2016 Linux XIA project - “Upgrading the FIB hash table of principals to the relativistic hash table”
- Mentored the GSoC 2015 Linux XIA project - “Implementing perfect hashing for mapping XID types to loaded principals”

Research Assistant @ Institute of Computing Technology

Guarantee IP Lookup Performance with FIB Explosion

Prof. Gaogang Xie Dec. 2013 to Feb. 2014

- This project proposes a memory efficient lookup scheme, which can be easily implemented on FPGA, GPU, CPU and Many-core platforms. For IPv4 FIBs, the amortised raw lookup average measure exceeds 300 Gbps for small 64-byte packets on both the CPU and GPU platform
- Conducted research and experiments on the scheme for both IPv4 and IPv6 FIBs

Research on URL Matching Algorithms in Wireless Router and its Application (Master Thesis)

Prof. Gaogang Xie Dec. 2013 to Jun. 2014

- Research in time-efficient and space-efficient algorithms on URL matching

Service-Aware Oriented Network Measurement Platform (973 Program)

Prof. Gaogang Xie Sept. 2010 to Nov. 2013

- Designed and implemented the system architecture with a specialized NIC , achieving a throughput of 4Gbps
- Participated in research on massive network traffic index and query, proposed an efficient index method, and reduced response time to 10% and index disk space to 50% at most, compared with Fastbit
- Implemented a Bandwidth Control System, supporting enterprise application with various types of control policies
- Proposed a time efficient algorithm based on PAT tree and Hash table to implement a virtual link module. A virtual link can be a collection of multiple physical links or a cluster of clients classified by specific rules
- Designed and implemented a Network Data Export System. Export content includes raw packet and flow. Flow Export formats, such as Netflow V5/V9 and sFlow, are supported. Export methods include file, JSON and socket
- Implemented IP datagram reassembly module, content search module, etc.

Netflow Probe

Prof. Gaogang Xie Mar. 2012 to Jul. 2012

- Improved total system performance by 5 times, resulting in a throughput of 10Gbps
- Added support for commodity NIC, Intel 82599 10GbE, by Netmap solution

Research Assistant @ Dalian University of Technology

Search Results Clustering

Prof. Xianchao Zhang Nov. 2008 to Jun. 2009

- Investigated and analyzed the characteristics of traditional text clustering algorithms
- Developed a clustering system based on Suffix Tree and Key Features respectively

	OS project: A RAM Disk Filesystem	Spring 2016													
	Distance-vector v.s. Path-vector routing protocol	Fall 2015													
	Flow scheduling schemes: FIFO v.s. RR v.s. DRR	Fall 2015													
	Go-Back-N v.s. Selective-Repeat ARQ	Fall 2015													
	Using an Echo Application to Measure TCP Performance	Fall 2015													
	Movie Preference Prediction	Fall 2014													
	Identification of co-authorship links by snapshot from DBLP	Fall 2014													
	Identification of social links by sampled Flickr's network	Fall 2014													
	Node Distances in Probabilistic Graph Databases	Fall 2014													
	An Efficient URL Filtering Engine for Home Gateway	Dec. 2013 to Jun. 2014													
	Reconstruction of Linux-0.11 OS Kernel (C)	Apr. 2012 to Jun. 2012													
	Sina Micro-blog Real Time Indexing System (Lucene)	Feb. 2012 to Apr. 2012													
	P2P Traffic Management System (C)	Mar. 2010 to Aug. 2010													
	Personalized Ranking of Search Results (C++)	Jun. 2009 to Feb. 2010													
	A Tiny Search Engine - Happy Search (Java, MySQL)	Mar. 2009 to Jun. 2009													
PATENT	[1] Qiaobin Fu , Guangxing Zhang, Gaogang Xie, Taihua He and Shangwen Dong. "A Smart Method and Apparatus for DDoS Defense." ICT, Chinese Academy of Sciences, filed in China.														
INTERNSHIP	Network Monitoring and Control System with Multi-cards Router Research Div., Industry Innovation Center for Future Network, China Oct. 2012 to May 2013														
	<ul style="list-style-type: none"> • Research in high performance monitoring system • Participated in design and implementation of a system architecture for the platform 														
ABILITIES AND SKILLS	<ul style="list-style-type: none"> • Proficient in C/C++ • Familiar with Linux kernel programming and networking software development • Familiar with Lua, MapReduce, Shell, Java, Python, Latex • Practical experience with HTML, jsp, PHP • Languages: English (professional proficiency), Chinese (native) 														
TEACHING EXPERIENCE	<ul style="list-style-type: none"> • CS 350 - Fundamentals of computing systems, TA	Fall 2016	May 2016 to Aug. 2016	Spring 2016	Fall 2015	May 2015 to Aug. 2015	Summer 2015	Spring 2015							
AWARDS	<ul style="list-style-type: none"> • 2015/2016 Teaching Excellence Award, BU CS	2016	2010	2011	2008, 2010	2009	2012	2009	2008	2008 – 2010	(2011)	(2008)	(2010)	(2006)	