

Mo Dong

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I am

- leading researcher in high performance and low latency data transfer protocols
- expert in network outage and breach prevention using formal network verification
- expert in enterprise campus and data center network architecture
- experienced developer for profiling and optimizing algorithms, code performance and building backend infrastructures for enterprise software
- experienced in customer management and software deployment
- an algorithmic trader for fun

Education **University of Illinois at Urbana Champaign, Department of Computer Science**
PhD student in Computer Science **August 2012 – May 2017 (expected)**

- Expected graduation date: 2017
- Advisor: Dr. P. Brighten Godfrey
- GPA: 4.0/4.0
- Relevant courses: Cryptocurrency Security, Distributed Systems, Advanced Distributed Systems, Advanced Computer Networks, Operating Systems, Software Engineering, Cloud Computing

Shanghai Jiao Tong University, Department of Electrical Engineering
B.S. in Electrical Engineering **September 2008 – June 2012**

- Advisor: Dr. Xinbing Wang
- GPA & Ranking: 3.76/4.0 or 90.60/100 (ranking 2 out of 250)

Professional Experience **Veriflow**
Founding Member, Core Algorithm Team Lead and Customer Manager May 2014 – present

- I lead a four-PhD team and own the core network modeling engine, which is the “secret sauce” of the product. Please see my blog for more high level information at goo.gl/OJwjK3. My job involves design and implementation of highly compact and efficient data structures, horizontally scalable and efficient formal methods algorithms and multi-threaded parallelism architecture.
- I am also heavily involved various infrastructure backend of the system such as data processing pipeline, web service backend, REST API and some devOps related work.
- I manage and lead most of deployments for customers in different industries sectors. I secured significant early sales and customer wins under high pressure.

Independent Trading
Algorithmic Trader for fun May. 2015 – present

- +Thousand-claw Cat: A scalable and generic cryptocurrency arbitrage platform.
- +Samsara: Production-ready cryptocurrency trading platform using data mining and learning of blockchain data to predict price change. Out-of-sample test yields close to 300% return in 3 months with > 7 sharpe ratio.

Project Clavo
My night-time pet project Feb. 2013 – Feb. 2015

- Clavo is a highly scalable and censorship resistant VPN service.
- I built an cross-platform cloud instance provision orchestration system to reduce the cost of operation to as low as \$0.03 per user month. It was highly profitable but I operated it for free.
- I built an censorship detection layer to not only resist but also proactively identify censors and block them with low operational costs.
- It was used by close to one thousand of users at peak time with 0 down time for 6 months but I no longer have time to maintain and develop that now.

Networking and System Group, University of Illinois at Urbana Champaign

Research Assistant

September 2012 – present

+Project 1: Performance-oriented Congestion Control (speedier.net/pcc)

- Re-architecting congestion control to achieve consistent high performance under real-world complex network conditions. This work is awarded Internet2 Innovative Application Award. Currently I am leading the development of PCCv2 with significantly improved theoretic framework and online learning rate control algorithm to achieve even higher performance and faster reaction to network changes. In collaboration with multiple major ISPs and Google (QUIC team) to push PCC to production.

+Project 2: Halfback: low latency and safe data delivery for short flows in Internet

+Project 3: Flexible Data Center Fabric with Source Routing

+Project 4: Transparent performance optimization for SDN network management platforms

NVP Controller Team, Nicira by vmWare

Member of Technical Staff, Intern

May 2013 – Aug 2013

+Project: TraceFlow: real-time troubleshooting of virtual overlay networks

- TraceFlow is a highly requested product feature to diagnose and analyze virtual network configuration errors for VMware's NSX network virtualization platform. I developed the feature in 10 weeks with full production readiness and filed two patents. Traceflow is in production use since Sep 2013.

National 973 Project Lab of Self-Organizing Networks, Shanghai Jiao Tong Univ.

Research Assistant

September 2009 – June 2012

+Project 1: Time-frequency flexible dynamic spectrum allocation in Cognitive Radio Networks

+Project 2: Bandwidth competition resolution in multi-hop wireless sensor networks

Tongqu Inc. , Shanghai, China

Co-founder and CEO

Oct. 2009 – May 2012

- tongqu.me uses machine intelligence to help university students discover offline events, such as parties, training courses, academic talks and technology meetups and find people with the same interests. I co-founded the company and worked on both the marketing side and technology (a natural language process engine) side of the company. The website now is the main hub of student activity of my undergrad university.

- Publications and Patent**
1. **Mo Dong**, Santhosh Prahbu, and P. Brighten Godfrey “Let me rephrase that: Transparent optimization in Software Defined Networks”, ACM Symposium on SDN Research (SOSR), April 2017
 2. Qingxi Li, **Mo Dong**, and P. Brighten Godfrey “Halfback: Running Short Flows Quickly and Safely”, International Conference on emerging Networking EXperiments and Technologies (CoNEXT), December 2015
 3. Sangeetha Abdu Jyothi, **Mo Dong**, and P. Brighten Godfrey “Towards a Flexible Data Center Fabric with Source Routing”, in Proc. of ACM SIGCOMM Symposium on SDN Research (SOSR), June 2015.
 4. **Mo Dong**, Qingxi Li, Doron Zarchy, P. Brighten Godfrey, and Michael Schapira “PCC: Re-architecting Congestion Control for Consistent High Performance”, in Proc. of 12th USENIX Symposium on Networked Systems Design and Implementation (NSDI), April 2015.
 5. **Mo Dong**, Qingxi Li, Doron Zarchy, P. Brighten Godfrey, and Michael Schapira. “Rethinking Congestion Control Architecture: Performance-oriented Congestion Control”, Demo in Proc. of Demo in Proc. of the ACM Special Interest Group on Data Communication 2014 (SIGCOMM 2014), Chicago, IL, 2014.
 6. Changle Li, Zhe Liu, Xiaoyan Geng, **Mo Dong**, Feng Yang, Xiaoying Gan, Xiaohua Tian, Xinbing Wang “Two Dimension Spectrum Allocation for Cognitive Radio Networks”, IEEE Transactions on Wireless Communications 13(3): 1410-1423 (2014)
 7. **Mo Dong**, G. Sun, X. Wang, Q. Zhang “Combinatorial Auction with Time-Frequency Flexibility in Cognitive Radio Networks”, in Proc. of IEEE International Conference on Computer Communications (INFOCOM) 2012

8. G. Sun, **Mo Dong**, Y. Xu, X. Wang, M. Guizani, “Opportunistic Spectrum Access to 3G Wireless CDMA Networks for Cognitive Radio” in Proc. of IEEE International Conference on Communications (ICC), Kyoto, Japan, April 2011.
9. **Mo Dong**, H. Jin, G. Sun, X. Wang, W. Liu, X. Wang, “Non-cooperative Game Based Social Welfare Maximizing Bandwidth Allocation in WSNs” in IEEE Global Communications Conference (Globecom) 2011, Dec, Houston, USA, 2011.
10. Igor Ganchev, Pankaj Thakkar, Teemu Kopenen, **Mo Dong**, Tracing network packets through logical and physical networks, USPTO Applicaton : 20160226741
11. Igor Ganchev, Pankaj Thakkar, Teemu Kopenen, **Mo Dong**, Tracing network packets by a cluster of network controllers, USPTO Applicaton : 20150016286

Honours and Awards

- +2013 Internet 2 Innovative Application Award, Internet 2, U.S.
- +2012 Excellent Graduate Student Award, Shanghai Jiao Tong Univ., China
- +2011 Honorable Mention, the Mathematical Contest on Modeling, U.S.
- +2011 High-Tech Award, Business Challenge, China Entrepreneur Network in Michigan, U.S.
- +2011 **National Academic Scholarship**, Ministry of Education, China (0.2% nation-wide)
- +2011 **A-Class Excellent Academic Scholarship**, Shanghai Jiao Tong Univ. (1% university-wide)
- +2010 Second Prize, China Undergraduate Mathematical Contest in Modeling, China
- +2010 **National Academic Scholarship**, the Ministry of Education, China
- +2010 B-Class Academic Excellence Scholarship, Shanghai Jiao Tong Univ., China.
- +2009 Second Prize, China Undergraduate Mathematical Contest in Modeling, China
- +2009 **National Academic Scholarship**, the Ministry of Education, China
- +2009 B-Class Academic Excellence Scholarship, SJTU, China.
- +2007 **First Prize**, National High School Contest on Mathematics, Chinese Mathematic Society

Professional Skills

- +Language: Day-to-day basis: C++, Python; Knowledgeable: C, Java, Objective-C, Swift
- +Databases: mySQL, Redis, Orientdb
- +Web: Flask
- +DevOps: git-flow, OpenStack, nginx, uWSGI, Docker, vagrant, ESXi, AWS, circleCI, Buildbot
- +Infrastructure: ZeroMQ, Rabbitmq, ZeroRPC, Hadoop
- +Networking Testing: GNS3, NS2, Mininet, Emulab, GENI, PlanetLab