

# Omid Alipourfard

- CONTACT**      [alipourfard@omid.io](mailto:alipourfard@omid.io)  
<https://omid.io>
- EDUCATION**
- Yale University**, New Haven, CT  
Ph.D., Computer Science      Aug. 2016 - present  
*Advisor*: Prof. Minlan Yu
- University of Southern California**, Los Angeles, CA  
Ph.D., Computer Science (transferred to Yale)      Aug. 2014 - July 2016  
*Advisor*: Prof. Minlan Yu
- Arizona State University**, Tempe, AZ  
M.S., Computer Science      Sep. 2012 - June 2014
- Sharif University of Technology**, Tehran, Iran  
B.S., Electrical Engineering, Electronics      Sep. 2006 - Nov. 2011  
*Advisor*: Prof. Bagheri Shouraki
- EXPERIENCE**
- Harvard University** [Exchange Scholar]      Spring 2018 - Present
- Designed Janus, a scalable traffic-aware planner that schedules management tasks in a data center network under traffic variations and failures. To achieve real-time planning, Janus leverages group theory to exploit the symmetry inherent to the data center topology to speed up the planning process. Janus can run management tasks up to 4 times faster than the state-of-the-art solutions (in submission [1]).
  - Designed a framework to evaluate measurement paradigms on software switches; our results show that as opposed to today’s trends that trade-off computation to save memory space and increase cache-locality, using more memory results in better performance for a broad set of measurement tasks [4].
- Microsoft Research** [Intern]      Summer 2015
- Designed a framework for automating cloud configuration selection for big data analytic applications [2]. Our framework uses Bayesian Optimization to build a black box model of the application performance without putting any explicit assumption on the internal structure of applications. We can find near-optimal cloud configurations with a quarter of the search cost of the existing solutions. Under the supervision of Hongqiang Liu and Ming Zhang.
- Google** [Software Engineering Intern]      Summer 2014, Summer 2017
- Designed a storage backend for a task management system for the ads infrastructure; with the new backend we had an easier time configuring the storage backend, used fewer resources, and achieved equal or better performance.
  - Worked on a root cause analysis system for the Jupiter data center network.
- Princeton University** [Visiting Student Research Collaborator]      Spring 2014
- Worked under the supervision of Prof. Jennifer Rexford, and Dr. Joshua Reich on Pyretic: one of the Frenetic family of Software Defined Networks (SDNs) programming languages.
  - Helped with the design of CacheFlow, a rule caching system for Software Defined Networks [3, 5]. CacheFlow pairs up a hardware and a software switch to give an illusion of an OpenFlow switch with an infinite amount of memory.

- PUBLICATIONS** [1] Omid Alipourfard, Jiaqi Gao, Jeremie Koenig, Christopher Harshaw, Minlan Yu, Amin Vahdat. "Janus: Risk based Planning of Network Changes in Evolving Data Centers" ACM SOSP, Aug 2019 (upcoming).
- [2] Omid Alipourfard, Minlan Yu. "Decoupling Algorithms and Optimizations in Network Functions" ACM SIGCOMM HotNets, November 2018.
- [3] Yang Zhou, Omid Alipourfard, Minlan Yu, Tong Yang. "Accelerating Network Measurement in Software" ACM SIGCOMM Computer Communication Review, July 2018.
- [4] Omid Alipourfard, Jianshu Chen, Hongqiang Liu, Shivaram Venkataraman, Minlan Yu, Ming Zhang. "CherryPick: Adaptively Unearthing the Best Cloud Configurations" USENIX NSDI, March 2017.
- [5] Naga Katta, Omid Alipourfard, Jennifer Rexford, and David Walker. "CacheFlow: Dependency-Aware Rule-Caching for Software-Defined Networks" ACM SOSR, March 2016, **Best Paper Award**.
- [6] Omid Alipourfard, Masoud Moshref, and Minlan Yu. "Re-evaluating Measurement Algorithms in Software." ACM SIGCOMM HotNets, November 2015.
- [7] Naga Katta, Omid Alipourfard, Jennifer Rexford, and David Walker. "Rule-Caching Algorithms for Software-Defined Networks." ACM SIGCOMM HotSDN, August 2014.
- GRADUATE COURSES** Advanced Compiler Design, Advanced Distributed Systems, Advanced Operating Systems, Advanced Computer Networks, Random and Approximate Algorithms, Combinatorial Algorithms, Design and Analysis of Algorithms, Logic for Computer Scientists, Computer Architecture, Software Verification.
- REVIEWER** Dependable Systems and Networks (2015). IEEE Transactions on Networking (2017, 2018). IEEE Transactions on Network and Service Management (2018). IEEE Transactions on Cloud Computing (2018). IEEE Transactions on Parallel and Distributed Systems (2018).
- AWARDS** Facebook Graduate Fellowship (2018). Yale Graduate Fellowship (2016).
- TALKS** [1] Decoupling Algorithms and Optimizations in NFs: SIGCOMM HotNets 2018  
[2-4] Cherrypick: Adaptively Unearthing the Best Cloud Configurations: USENIX NSDI 2017, UPenn DSL Seminar 2017, Microsoft Research 2017  
[5] Measurement on Software Switches: SIGCOMM HotNets 2015