

# Masoud Moshref Javadi

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## Education

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University of Southern California, Los Angeles

Aug 2010-Present

Ph.D. Candidate in Computer Engineering

GPA: 3.97

Thesis: Resource Virtualization for Software Defined Networks; Advisor: Ramesh Govindan & Minlan Yu

Sharif University of Technology, Tehran, Iran

Jan 2010

MSc in IT Engineering

GPA: 18.98/20

Thesis: LayeredCast: A hybrid peer-to-peer architecture for real-time layered video streaming over Internet

BSc in IT Engineering

GPA: 18.7/20

Thesis: MobiSim: Design and implementation of a mobility model simulator in mobile ad-hoc networks

## Publications

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### Software Defined Networks

1. M. Moshref, M. Yu, R. Govindan, A. Vahdat, DREAM: Dynamic Resource Allocation for Software-defined Measurement, **SIGCOMM**, 2014
2. M. Moshref, A. Bhargava, A. Gupta, M. Yu, R. Govindan, Flow-level State Transition as a New Switch Primitive for SDN, **HotSDN**, 2014
3. M. Moshref, M. Yu, A. Sharma, R. Govindan, Scalable Rule Management for Data Centers, **NSDI**, 2013
4. M. Moshref, M. Yu, R. Govindan, Resource/Accuracy Tradeoffs in Software-Defined Measurement, **HotSDN**, 2013
5. M. Moshref, M. Yu, A. Sharma, R. Govindan, vCRIB: Virtualized Rule Management in the Cloud, **HotCloud**, 2012

### P2P Video Streaming

6. M. Moshref, R. Motamedi, H. Rabiee, M. Khansari, LayeredCast - A Hybrid Peer-to-Peer Live Layered Video Streaming Protocol, **International Symposium on Telecommunication (IST)**, 2010
7. M. Moshref, H. Rabiee, S. Nari, Challenges and Solutions in Peer-to-peer Live Video Streaming, Tech. rep. Computer Engineering, Sharif University of Technology, 2009

### Mobile Ad-hoc Networks

8. M. Mousavi, H. Rabiee, M. Moshref, A. Dabirmoghaddam, Mobility Pattern Recognition in Mobile Ad-Hoc Networks, **ACM International Conference on Mobile Technology, Applications and Systems**, 2007
9. M. Mousavi, H. Rabiee, M. Moshref, A. Dabirmoghaddam, Model Based Adaptive Mobility Prediction in Mobile Ad-Hoc Networks, **IEEE WiCOM**, 2007
10. M. Mousavi, H. Rabiee, M. Moshref, A. Dabirmoghaddam, Mobility Aware Distributed Topology Control in Mobile Ad-hoc Networks with Model Based Adaptive Mobility Prediction, **IEEE WiMob**, 2007
11. M. Mousavi, H. Rabiee, M. Moshref, A. Dabirmoghaddam, MobiSim: A Framework for Simulation of Mobility Models in Mobile Ad-Hoc Networks, **IEEE WiMob**, 2007

### Others:

12. M. Moshref, A. Sharma, H. Madhyastha, L. Golubchik, R. Govindan, MRM: Delivering Predictability and Service Differentiation in Shared Compute Clusters, Tech. rep. Computer Science, USC, 2013
13. A. Gharakhani, M. Moshref, Evaluating Iran's Progress in ICT Sector Using e-Readiness Index, A System Dynamics Approach, **International System Dynamics Conference**, 2007

## Recent Research Projects

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- Proposed a framework to allocate network resources to concurrent measurement queries while guaranteeing their accuracy (DREAM [1]). This includes algorithms for estimating accuracy without a ground-truth and allocating resources to leverage resource accuracy trade-off [4] and resource requirement variations over time and across switches. Built DREAM prototype compatible with today's hardware and software switches.
- Proposed a centralized networking rule repository (e.g., for access control rules) that distributes rules dynamically on switches with limited resources using a new approximation algorithm (vCRIB [3, 5]).
- Proposed a switch programming abstraction based on finite state machines and a switch architecture to express stateful network policies efficiently in Software Defined Networks (FAST [2]).

## Presentations

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- DREAM: Dynamic Resource Allocation for Software-defined Measurement: **SIGCOMM**, 2014
- Flow-level State Transition as a New Switch Primitive for SDN: **HotSDN**, 2014
- Resource Virtualization for Software Defined Networks: **RSRG group in Caltech**, 2014
- Scalable Rule Management for Data Centers: **NSDI**, 2013 and guest lecture in **CSci694b, USC**, 2014
- vCRIB: Virtualized Rule Management in the Cloud: **HotCloud**, 2012

## Posters

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- M. Moshref, A. Bhargava, A. Gupta, M. Yu, R. Govindan, Flow-level State Transition as a New Switch Primitive for SDN, **SIGCOMM**, 2014
- M. Moshref, M. Yu, R. Govindan, A. Vahdat, DREAM: Dynamic Resource Allocation for Software-defined Measurement, **NANOG on the road**, 2014
- M. Moshref, M. Yu, R. Govindan, Software Defined Measurement for Data Centers, **NSDI**, 2013
- M. Moshref, A. Sharma, H. Madhyastha, L. Golubchik, R. Govindan, MRM: Delivering Predictability and Service Differentiation in Shared Compute Clusters, **SoCC**, 2013

## Teaching Experience

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### University of Southern California

2014

- CSci350: Introduction to Operating Systems

### Sharif University of Technology

2005-2009

- Object Oriented System Design (2 semesters), Cryptography Theory, Multimedia Systems, Web Programming, Information Technology Project Management, Computer Workshop (3 semesters)

## Academic Services

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- **Paper Review**
  - Transaction on Networking, Transaction on Communication
  - HotSDN'13, HotCloud'14, HotSDN'14, CoNext'14, ANCS'14
- **Mentoring**
  - Harsh Patel (USC, CS MSc): Virtualizing Rate-limiters in SDN
  - Aditya Kamath (Viterbi-India program, Undergrad): Implementing Sketches in Software Switches
  - Adhip Gupta (USC, CS MSc): Flow-level State Transition as a New Switch Primitive for SDN
  - Apoorv Bhargava (USC, CS MSc): Flow-level State Transition as a New Switch Primitive for SDN
- **Co-chair for NSDI Shadow PC (2013, 2014, 2015)**
  - We selected a representative set of NSDI submitted papers for students to review. We set-up HotCRP the same as the original conference and hold PC meetings to practice actual decision making process. At the end, we shared our reviews with authors and compared our decisions and reviews with actual PC's for a subset of papers.

## Awards and Honors

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Student travel grant for USENIX Federated Conferences Week'12 and NSDI'13

USC Provost Ph.D. Fellowship Recipient

2010

1st among IT Engineering students and 2nd among CE students (HW, SW, AI and IT students) in MSc

2010

1st among IT Engineering students and 4th among CE students (110 HW, SW, and IT students) in BSc

2007

Talented Student Office of Sharif University of Technology grant for graduate study

2007

## Technical Skills

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- **Computer Programming:**
  - Day-to-Day use: Java, Matlab, Bash scripting
  - Have done projects using: C, C++, PHP, Python, JavaScript, SQL, J2EE & related Framework (Hibernate, Struts, Portlet, Axis), XML related languages (XSL, DTD, XQuery, RDF), Verilog, Flash Action Scripting
- **Distributed Framework:** Cassandra, Mahout, Hadoop (Map-Reduce), Pig
- **Simulators/Emulators:** OMNet++, SimpleScalar, Mininet
- **Software-defined Networking:** Open vSwitch, Pox, Nox, Floodlight