

# APOORVE MOHAN

370 WWH CCIS, 440 Huntington Avenue, Boston, MA 02115, USA

Website: <https://www.apoorve.com>

E-Mail: [mohan.ap@husky.neu.edu](mailto:mohan.ap@husky.neu.edu)

## RESEARCH INTEREST

---

Broadly, I am interested in *Systems and Networking*. My current research revolves around improving efficiency, security, and operation of *bare-metal clouds*.

## EDUCATION

---

### Northeastern University

- Ph.D. Computer Engineering (*GPA: 3.92*) *2014 - Present*
- Thesis Advisor(s): Prof. Gene Cooperman, Prof. Orran Krieger

### University of Delhi

- M.Sc. Computer Science *2009 - 2011*
- B.Sc. (Hons.) Computer Science *2006 - 2009*

## SELECTED PUBLICATIONS

---

[Non-intrusive Software Introspection](#), **A.Mohan**, S.Nadgowda, A.Turk, S.Suneja, C.Isci, G.Cooperman, P.Desnoyers, O.Krieger *(Under Review)*

[Batchpool: Improving Throughput of Batch Clusters](#), **A.Mohan**, R.Garg, G.Cooperman *(Under Review)*

[Supporting Security Sensitive Tenants in a Bare-Metal Cloud](#), A.Mossayebzadeh, **A.Mohan\***, S.Tikale, M.Abdi, N.Schear, T.Hudson, C.Munson, L.Rudolph, G.Cooperman, P.Desnoyers, O.Krieger *(Usenix ATC 2019)*  
*(\*Co-first Author)*

[M2: Malleable Metal as a Service](#), **A.Mohan**, A.Turk, R.S.Gudimetla, S.Tikale, J.Hennessey, G.Cooperman, P.Desnoyers, O.Krieger *(IEEE IC2E 2018)*

## ONGOING PROJECTS

---

### [BareShala: Improving Resource Efficiency in Consolidated Data Centers](#)

A new data center architecture to enable short-term multiplexing of unused bare-metal servers between co-located clusters to improve aggregate resource efficiency in enterprise data centers.

### [FLOCX: First Layer of Open Cloud Exchange](#)

A marketplace that enables trading of bare-metal resources between mutually non-trusting entities.

## RESEARCH EXPERIENCE

---

### Summer Research Intern

*2017, 2018*

*IBM Research T.J. Watson, Yorktown Heights*

*Mentor: Dr. Gheorghe Almasi*

- Projects: Dynamic partitioning of data centers at the bare-metal layer, Analyzing system bottlenecks for distributed DNN training in commodity data centers

### Research Student

*2015 - Present*

*Massachusetts Open Cloud, Boston*

*Advisor: Prof. Orran Krieger*

- Projects: Elastic secure infrastructure, Non-intrusive bare-metal introspection, Bare-Metal Resource Utilization Control System, Bare-Metal Exchange Marketplace

### Graduate Research Assistant

*2014 - Present*

*Khoury College of Computer Sciences, Northeastern University, Boston*

*Advisor: Prof. Gene Cooperman*

- Project: Efficient batch processing using user-space checkpoint-restart

## SOFTWARE DEVELOPMENT EXPERIENCE

---

### Project Associate

2012 - 2014

*Indian Institute of Technology, Delhi*

- Involved in design and implementation of an IaaS cloud platform (<https://baadal.nmeict.in>)

### Software Developer

2011 - 2012

*One97 Communications Ltd., NOIDA*

- Java-based full-stack development

## TEACHING EXPERIENCE

---

### Teaching Assistant (Fall)

2016

*Khoury College of Computer Science, Northeastern University, Boston*

- CS 5600 Computer Systems (*Graduate*)

- CS 3650 Computer Systems (*Undergraduate*)

### Guest Lecturer

Spring, Fall 2013

*Maharaja Agrasen College, University of Delhi*

- C++ Programming, Introduction to Computer Fundamentals (*Undergraduate*)

### Assistant Professor (Adhoc)

Fall 2012

*Maharaja Agrasen College, University of Delhi*

- MIPS and Shell Programming, Introduction to Computer Fundamentals (*Undergraduate*)

## PRESENTATIONS

---

### Agentless Bare-Metal Introspection

(*MassOpenCloud Annual Workshop 2018*)

### Marrying Cloud and HPC for Long-Term Happiness

(*IBM Research Workshop 2017*)

### Elastic OpenStack Deployments

(*OpenStack Summit-Boston 2017*)

### Bare Metal Imaging

(*MassOpenCloud Annual Workshop 2016*)

## POSTERS

---

### - Recycling Lost CPU Cycles

(*New England Network and Systems Day 2017*)

### - Marrying Cloud and HPC for Long-Term Happiness

(*Supercomputing Conference 2016*)

## TECHNICAL EXPOSURE

---

**Programming and Scripting:** Python, C/C++, Bash, Java

**Parallel and Cluster Computing:** pthreads, OpenMP, OpenMPI, CUDA, SLURM

**System Profiling:** perf, sysstat, tcpdump, fio, strace, ptrace, gdb

**Cloud and Virtualization:** OpenStack, KVM, QEMU, libvirt

**Deep Learning:** Caffe, Alexnet, Imagenet

**Databases:** MySQL, SQLite, PostgreSQL

**Storage:** Ceph, Software iSCSI (TGT/IET), RAID

**Web:** JavaScript, HTML, Web2py, CSS, JQuery, REST