

# MOHAN KUMAR KUMAR

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Research Scientist  
Facebook Reality Labs (FRL)

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## Education

<b>Georgia Institute of Technology</b>	Ph.D. in Computer Science Specialization: Systems Thesis: Taming Latency In Data Center Applications Advisor: Dr. Taesoo Kim Atlanta, GA	05/2014–05/2019
<b>Georgia Institute of Technology</b>	Masters in Computer Science Specialization: Systems Atlanta, GA	05/2014–05/2019
<b>University of Madras</b>	B.E in Computer Science Chennai, India	05/1998–05/2002

## Current Job

I am a research scientist working in Facebook Reality Labs (FRL) from July 29th, 2019. I am part of the team that is building a microkernel-based operating system.

I am working on building the connectivity stack from the ground up. In addition, I work on analyzing the performance of the network stack on RTOS (such as Zephyr) that run on low power devices.

## Conference and journal publications

1. **ECOTLB: Eventually Consistent TLBs**  
Steffen Maass\*, **Mohan Kumar\***, Taesoo Kim, Tushar Krishna, and Abhishek Bhattacharjee.  
In *ACM Transactions on Architecture and Code Optimization (TACO 2020)*,  
**To appear**
2. **SOLROS : A Data-Centric Operating System Architecture for Heterogeneous Computing**  
Changwoo Min, Woon-Hak Kang, **Mohan Kumar**, Sanidhya Kashyap, Steffen Maass, Heeseung Jo, and Taesoo Kim.  
In *Proceedings of the 13th ACM European Conference on Computer Systems (EuroSys 2018)*,  
Porto, Portugal, April, 2018.
3. **LATR: Lazy Translation Coherence**  
**Mohan Kumar\***, Steffen Maass\*, Sanidhya Kashyap, Jan Vesely, Zi Yan, Taesoo Kim, Abhishek Bhattacharjee, and Tushar Krishna.  
In *proceedings of the 23rd ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2018)*,  
Williamsburg, VA, USA, March, 2018.
4. **Mosaic: Processing a Trillion-Edge Graph on a Single Machine.**  
Steffen Maass, Changwoo Min, Sanidhya Kashyap, Woonhak Kang, **Mohan Kumar**, and Taesoo Kim.  
In *Proceedings of the 12st ACM European Conference on Computer Systems (EuroSys 2017)*,  
Belgrade, Serbia, April, 2017.  
**Best student paper**

5. **TCP Ordo: The cost of ordered processing in TCP Servers**  
**Mohan kumar** and Ada Gavrilovska.  
*In Proceedings of the IEEE International Conference on Computer Communications (INFOCOM 2016)*,  
 San Fransico, CA, April 2016.
6. **S-NFV: Securing NFV states by using SGX.**  
 Ming-Wei Shih, **Mohan Kumar**, Taesoo Kim, and Ada Gavrilovska.  
*In Proceedings of the ACM International Workshop on Security in SDN and NFV (SDN-NFV Security 2016)*,  
 New Orleans, LA, March, 2016.  
**Best paper and published in NFV congress**

## Posters

1. **mKPAC: Kernel Packet Processing for Manycore Systems**  
 Ramneek, **Mohan Kumar**, Taesoo Kim, and Sungin Jung.  
*In Proceedings of the 19th International Middleware Conference (Middleware'18) Poster*  
 Rennes, France, December, 2018.
2. **Network Function Fault Isolation in a Single Address Space**  
**Mohan Kumar**, Steffen Maass, and Taesoo Kim.  
*In the 14th USENIX Symposium on Networked Systems Design and Implementation (NSDI'17) Poster*  
 Boston, MA, April, 2017.
3. **DistCoz: Tell Me What to Optimize in My Distributed Application**  
 Steffen Maass, **Mohan Kumar**, and Taesoo Kim.  
*In the 14th USENIX Symposium on Networked Systems Design and Implementation (NSDI'17) Poster*  
 Boston, MA, April, 2017.
4. **VNFStore: NFV State Externalizing Framework**  
**Mohan Kumar** and Ada Gavrilovska.  
*In Diversity Workshop at SOSP'15*, Monterey, CA, October, 2015.

## Awards

<b>Eurosys'17</b>	Best student paper award	04/2017
<b>SDN-NFV'16</b>	Best paper award	03/2016

## Travel Grants

1. **25th ACM Symposium on Operating Systems Principles**  
 Monterey, CA 10/2015
2. **Diversity Workshop at SOSP'15**  
 Monterey, CA 10/2015
3. **14th USENIX Symposium on Networked Systems Design and Implementation**  
 Boston, MA 03/2017

## Invited Talks and Presentations

<b>Infocomm'14</b>	TCP Ordo: The cost of ordered processing in TCP Servers	04/2016
<b>ASPLOS'18</b>	LATR: Lazy Translation Coherence	03/2018

## Work Experience

<b>Research scientist</b>	Facebook Reality Labs (FRL), Menlo Park, CA Working in Facebook Reality Labs (FRL) on a microkernel operating system	07/2019–
<b>Software engineering intern</b>	Facebook, Menlo Park, CA Worked on Facebook data center's network system software using eBPF and XDP	05/2018–08/2018
<b>Research Intern</b>	AT&T Labs, Bedminster, NJ Worked on improving OS per core packet processing performance for software switching	06/2016–08/2016
<b>Research Intern</b>	HP Labs, Palo Alto, CA Worked on communication software framework for next generation data centers	05/2015–08/2015
<b>Research Assistant</b>	Georgia Tech, Atlanta, Ga Research in the CERCS under Dr. Ada Gavrilovska and Systems Software & Security Lab under Dr. Taesoo Kim.	05/2014–05/2019
<b>Senior Software Engineer</b>	Cisco Mobile Internet Technology Group, Bangalore, India Worked on the software stack design and development for 4G telecommunication nodes such as Packet Data Network Gateway(PGW) and Serving Gateway(SGW)	08/2010–05/2014
<b>Senior Software Engineer</b>	IBM, Bangalore, India Worked on the software stack design and development for 3G telecommunication nodes	08/2008–08/2010
<b>Systems Engineer</b>	TCS, Mumbai, India Worked on the software stack design and development for 2G telecommunication nodes for call processing	05/2003–08/2008

## Teaching Experience

<b>Teaching Assistant</b>	Georgia Tech, Atlanta, Ga Teaching assistant for Advanced Operating Systems(AOS) during Spring 2016	01/2016–05/2016
<b>Teaching Assistant</b>	Georgia Tech, Atlanta, Ga Teaching assistant for Advanced Operating Systems(AOS) during Spring 2018	01/2018–05/2018

## Professional Service

Program Committee | USENIX ATC 2020

## Work Authorization

US permanent resident as outstanding researcher.