

Praveen Tammana

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Google scholar link

Current position	I am currently an Assistant Professor in Computer Science Department at IIT-Hyderabad.	
Research interests	Broadly, my research interests are at the intersection of Networking, Security, and Machine Learning for Networks. Currently, my focus is on designing robust, secure, and easy to manage real-world networked systems using exciting emerging technologies such as Software-Defined Networking (SDN) and P4-based programmable data planes. My research style is to first determine the real-world network problems, understand the practical constraints, then develop scalable and efficient solutions by redesigning the division of labor across network entities (e.g., hosts, network core, central management system, etc.) My recent work focuses on two aspects of network management: network telemetry and traffic engineering.	
Education	Ph.D, University of Edinburgh, UK Thesis: Software-Defined Datacenter Network Debugging Advisors: Prof. Myungjin Lee , Prof. Mahesh Marina	2013-18
	Masters in Computer Science, IIT-Madras, India Thesis: Impact of node buffer on DTN Routing Advisor: Prof. C. Siva Ram Murthy	2009-11
	B.E in Computer Science and Engineering Vasavi College of Engineering, Osmania University, India	2005-09
Research Experience	Princeton University, NJ, USA Postdoctoral Researcher Hosts: Prof. Jennifer Rexford and Prof. David Walker	May 2018- July 2020
	University of Edinburgh, UK Research Assistant Project: Network Measurement as a Service (NMaaS) Co-PIs: Prof. Myungjin Lee and Prof. Dimitrios Pezaros	Aug 2017-April 2018
	Cisco Systems, San Jose, USA Research Intern Project: Cisco Network Assurance Engine Host: Dr. Ramana Kompella, Dr. Sundhar Iyer	May 2016-May 2017
Publications	<p><i>Adaptive Weighted Traffic Splitting in Programmable Data Planes</i> Kuo-Feng Hsu, Praveen Tammana, Ryan Beckett, Ang Chen, Jennifer Rexford, David Walker [SoSR'20] ACM Symp. on Software Defined Networking Research, CA, USA (A*)</p> <p><i>Grasp the Root Causes in the Data Plane: Diagnosing Latency Problems with SpiderMon</i> Weitao Wang, Praveen Tammana, Ang Chen, T.S. Eugene Ng [SoSR'20] ACM Symp. on Software Defined Networking Research, CA, USA (A*)</p> <p><i>Tracking P4 Program Execution in the Data Plane (Best paper award)</i> Suriya Kodeswaran, Mina Tahmasbi Arashloo, Praveen Tammana, Jennifer Rexford [SoSR'20] ACM Symp. on Software Defined Networking Research, 2020, CA, USA (A*)</p>	

Contra: A Programmable System for Performance-aware Routing

Kuo-Feng Hsu, Ryan Beckett, Ang Chen, Jennifer Rexford, **Praveen Tammana**, David Walker
[NSDI'20] In USENIX Symp. on Networked Systems Design and Implementation, CA, USA (A*)

Distributed Network Monitoring and Debugging with SwitchPointer

Praveen Tammana, Rachit Agarwal, and Myungjin Lee
[NSDI'18] In USENIX Symp. on Networked Systems Design and Implementation, WA, USA (A*)

Fault Localization in Large-Scale Network Policy Deployment

Praveen Tammana, Ch. Nagarajan, Pavan Mamillapalli, Ramana Kompella, Myungjin Lee
[ICDCS'18] In IEEE Intl. Conference on Distributed Computing Systems, Vienna, Austria (A*)

Simplifying Datacenter Network Debugging with PathDump

Praveen Tammana, Rachit Agarwal, and Myungjin Lee
[OSDI'16] In USENIX Symp. on Operating Systems Design and Implementation, GA, USA (A*)

CherryPick: Tracing Packet Trajectory in Software-Defined Datacenter Networks

Praveen Tammana, Rachit Agarwal, and Myungjin Lee
[SoSR'15] In ACM SIGCOMM Symp. on Software Defined Networking Research, CA, USA (A*)

Buffer Dimensioning of Delay-Tolerant Network Nodes - A Large Deviations Approach

V. Mahendran, **Praveen Tammana**, and C. Siva Ram Murthy
[ICDCN'12] In Intl. Conference on Distributed Computing and Networking, Hong Kong, China

Impact of Persistent Storage on the DTN Routing Performance

V. Mahendran, **Praveen Tammana**, and C. Siva Ram Murthy
[ICDCN'12] In Intl. Conference on Distributed Computing and Networking, Hong Kong, China

Patents published in USA

1. *Fault localization in large-scale network policy deployment*

<https://patents.google.com/patent/US20180351788A1/en>

2. *Associating network policy objects with specific faults corresponding to fault localizations in large-scale network deployment*

<https://patents.google.com/patent/US20180351782A1/en>

Industry Experience

Juniper Networks, Bangalore, India

Nov 2012-Jul 2013

Software Engineer

Team: SRX Series Network Firewalls

Intel Technology, Bangalore, India

Aug 2011-Nov 2012

Graphics Software Engineer

Wipro Technology, Hyderabad, India

Nov 2008 - May 2009

Developer Intern

Mentoring Experience

Maruthi, Ph.D., IIT Hyderabad, 2020 - current

Weitao Wang, Ph.D., Rice University, 2018 - current

Suriya Kodeswaran, M.S., Princeton University, 2018 - 2020

Kuo-feng, Ph.D., Rice University, 2018 - 2020

Michal Mionkowski, UG, Univ. of Edinburgh, 2017 - 2018

Mohammad Raihan, UG, Univ. of Edinburgh, 2017 - 2018

Research talks**Redesigning How Networks Work to make the Net"work"**

Dec 2020: Princeton systems and networking group, IIT-Hyderabad

Jan 2020: IIT-Bombay, IIT-Madras, IIT-Delhi, IIT-Kanpur, IIIT-Hyderabad, IIIT-Delhi

Feb 2020: IISc-Bengaluru, MSR-Bengaluru

Adaptive Weighted Traffic Splitting using Programmable Data planes

Oct 2019: Network Programming Initiative (NPI) Annual Retreat, New York, USA

Distributed Network Monitoring and Debugging with SwitchPointer

Feb 2019: Network Programming Initiative (NPI) Annual Retreat, New York, USA

Nov 2019: Morgan Stanley, New York, USA

March 2018: USENIX NSDI, Renton, Washington, USA

Feb 2018: Network systems group, Edinburgh, UK

Fault Localization in Large-Scale Network Policy Deployment

July 2018: IEEE ICDCS, Vienna, Austria

June 2018: Networks and systems group, Princeton University, USA

July 2017: Network systems group, Edinburgh, UK

May 2017: Cisco Systems, San Jose, California, USA

Simplifying Datacenter Network Debugging with PathDump

Nov 2016: AT&T Labs, California, USA

Nov 2016: Open NFP DXDD, Mountain view, California, USA

Nov 2016: USENIX OSDI, Savannah, Georgia, USA

Oct 2016: Cisco systems, San Jose, California, USA

Nov 2017: Indian Institute of Technology - Tirupathi, India

Tracing Packet Trajectory in Software-Defined Datacenter Networks

Jun 2015: ACM SIGCOMM SOSR, Santaclara, California, USA

Jun 2015: Scottish Networking Event, SCONE, Heriot-Watt University, UK

Towards Distributed Traffic Measurement in Datacenters

Jul 2014: UK Academic Meeting on Systems and Networks, COSENERS, Abingdon, UK

Program Committee

ACM SIGCOMM Posters and Demos, 2020, New York City, USA

P4 Expert Roundtable Series, 2020, Virtual session

SDN/NFV track for IEEE ICCCN, 2020, Hawaii, USA

External Reviewer

Jrnl. of parallel and distributed computing, Infocom 2018, Eurosyst 2018, IEEE ICDCS 2017, NetSoft 2017, IEEE IFIP-WWIC 2019, IEEE/ACM Transactions on Networking (ToN), and IEEE Transactions on Network and Service Mgmt (TNSM).

Professional Activities

Invited to vist one of the Microsoft's Data centers in Washington, USA.

Participated in ACM IMC 2017 shadow PC program.

Student volunteer, PLDI 2014 conference.

Volunteer of Swecha, Andhra pradesh chapter of free software movement, India (FSMI).

Coordinated Free and open-source software (FOSS) workshops, IIT Madras.

**Awards/
Achievements**

Grant to attend conferences: SIGCOMM'17, SIGCOMM'18, NSDI'18, OSDI'16, SoSR'15, ICDCS'18.
Fully funded overseas research scholarship, University of Edinburgh.
Outstanding teaching assistance award, IIT Madras.
Graduate Aptitude Test in Engineering (GATE), All India Rank 194.
Awarded second best undergraduate project, Osmania University, Hyderabad.
State-level Engineering Entrance Examination (EAMCET), Rank 667.