

## Tarun Mangla

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RESEARCH INTERESTS	Video Streaming, Wireless Networks, QoE analysis	
EDUCATION	<b>College of Computing, Georgia Institute of Technology, Atlanta, Georgia, USA,</b> <i>PhD student, School of Computer Science</i> August, 2014 - <i>Present</i> <ul style="list-style-type: none"><li>• <i>Cumulative Grade Point Average:</i> 4.0/4.0</li><li>• <b>Advisors:</b> Prof. Mostafa Ammar and Prof. Ellen W. Zegura</li></ul> <b>Indian Institute of Technology, Delhi, India</b> <i>B.Tech in Computer Science and Engineering</i> July, 2010 - May, 2014 <ul style="list-style-type: none"><li>• <i>Cumulative Grade Point Average:</i> 8.50/10</li><li>• <i>Thesis Title:</i> Analysing highly directional antennas' mesh network</li></ul>	
PUBLICATIONS	<b>Using Session Modeling to Estimate HTTP-Based Video QoE Metrics From Encrypted Network Traffic</b> Tarun Mangla, Emir Halepovic, Ellen Zegura, Mostafa Ammar. IEEE Transactions on Network Service and Management, (TNSM) June 2019  <b>eMIMIC: Estimating HTTP-based Video QoE Metrics from Encrypted Network Traffic</b> Tarun Mangla, Emir Halepovic, Ellen Zegura, Mostafa Ammar. IFIP Traffic Measurement and Analysis, (TMA) 2018 ( <i>Best paper</i> )  <b>VideoNOC: Assessing Video QoE for Network Operators using Passive Measurements</b> Tarun Mangla, Emir Halepovic, Rittwik Jana, Kyung-Wook Hwang, Marco Platania, Ellen Zegura, Mostafa Ammar. ACM Multimedia Systems (MMSys) 2018  <b>MIMIC: Using passive network measurements to estimate HTTP-based adaptive video QoE metrics</b> Tarun Mangla, Emir Halepovic, Mostafa Ammar, Ellen Zegura. IEEE/IFIP Workshop on Mobile Network Measurement (MNM) 2017  <b>TANGO: Toward a More Reliable Mobile Streaming through Cooperation between Cellular Network and Mobile Devices</b> Nawanol Theera-Ampornpunt, Tarun Mangla, Saurabh Bagchi, Rajesh Panta, Kaustubh Joshi, Mostafa Ammar, Ellen Zegura. IEEE Symposium on Reliable Distributed Systems (SRDS), 2016  <b>Video Through a Crystal Ball: Effect of Bandwidth Prediction Quality on Adaptive Streaming in Mobile Environments</b> Tarun Mangla, Nawanol Theera-Ampornpunt, Mostafa Ammar, Ellen Zegura, Saurabh Bagchi. ACM Workshop on Mobile Video Delivery (MoVid) 2016.  <b>Optimal radius for connectivity in duty-cycled wireless sensor networks</b> Amitabha Bagchi, Cristina M. Pinotti, Sainyam Galhotra, Tarun Mangla. ACM Transactions on Sensor Networks (ToSN) 2015.  <b>Optimal radius for connectivity in duty-cycled wireless sensor networks</b> Amitabha Bagchi, Cristina M. Pinotti, Sainyam Galhotra, Tarun Mangla. ACM Conference on Modeling, Analysis and	

Simulation of Wireless and Mobile Systems (MSWIM) 2013.

RESEARCH  
PROJECTS

**QoE measurement and enhancement in HTTP-based video streaming**

*Mostafa Ammar* and *Ellen Zegura*, Georgia Institute of Technology August 2014 - Present

- Using passive network measurements to infer and manage end-user video quality of experience
- Towards single network bandwidth predictions for bitrate adaptation

**Understanding LTE connectivity in the US**

*Ellen Zegura*, Georgia Institute of Technology

January 2019 - Present

- Compare the connectivity as measured from a variety of datasets collected using different methodologies

**Analyzing highly directional 60GHz mesh networks**

*Amitabha Bagchi* and *Vinay Ribeiro*, IIT Delhi

Jan 2013 - May 2013

- Investigated the connectivity conditions and latency in mesh networks formed by directional antennas.
- Investigated the possibility of using 60GHz directional antenna mesh network for secure communication and used simulation for evaluating results.

**Optimal Radius for Connectivity in Duty-Cycled Wireless Sensor Networks**

*Amitabha Bagchi*, IIT Delhi

India Jan 2013 - May 2013

- Investigated the transmission radius for connectivity by modelling the network as random geometric graph.
- Simulated large graphs using efficient data structures and algorithms (kd-tree, union find algo).

PROFESSIONAL  
EXPERIENCE

**AT&T Research Labs, NJ, USA**

Sep 2016 - Dec 2016, May 2018 - Aug 2018

Research Intern hosted by *Emir Halepovic*

Video QoE inference in cellular networks using passive network measurements.

**Microsoft Research India, Bangalore, India**

Research Intern hosted by *Venkat Padmanabhan*

May 2016 - August 2016

Using Multipath for improving the QoE in Real-Time Streaming.

**Yahoo Inc., Sunnyvale, CA, USA**

May 2015 - August 2015

Software Engineering Intern hosted by *Ahmed Mansy & Partha Kanuparth*

Worked on a performance-based traffic engineering system for video workloads.

**Microsoft India (R&D) Private Limited, Hyderabad, India**

May 2013 - July 2013

Software Engineering Intern

Developed a prototype to infer social reference in a search query utilizing user's social graph.

**Cavium Networks, Hyderabad, India**

May 2012 - July 2012

Software Engineering Intern

Worked on removing bottlenecks and reducing runtime of compiler for Neuron Search Processor launched in Oct 2012.

PROFESSIONAL  
SERVICE AND  
TEACHING  
EXPERIENCE

Reviewer: IFIP TMA 2018 (Shadow PC), ACM IMC 2018 (Shadow PC), ACM S3 2019 (Mobicom workshop)

Teaching Assistant

*Advanced Computer Networks, CS6250 OMSCS, Georgia Tech*

Summer 2019

- Part of the course content designing team for a revised version of the course
- Designed and scripted lecture modules on transport and application-layer

Guest Lecture on Inter-domain routing for undergraduate Computer Networking      Spring 2019

Teaching Assistant

*Advanced Computer Networks, CS6250, Georgia Tech*      Spring 2016, Fall 2017, Fall 2018

- Guest Lecture on Bitrate Adaptation Algorithms in Video Streaming (Fall 2017)

Teaching Assistant

*Introduction to Probability and Stochastic Processes, MAL250, IIT Delhi*      Spring 2014

- Prepared and conducted tutorial to discuss course concepts and homework
- Graded exams and quizzes

TECHNICAL SKILLS    Programming : C++, Python, Java, Matlab, JavaScript, Hadoop, Hive, SQL  
Libraries and Platforms : Android Programming, PlanetLab, Emulab, Phantomnet, MPI, OpenMP.

SCHOLASTIC  
ACHIEVEMENTS

- Best paper award, IFIP TMA 2018
- Recipient of Student Travel Grant for IFIP TMA PhD School in 2018
- Recipient of Student Travel Grant for IEEE ICNP in 2015
- All India Rank 79 in IIT-JEE 2010 among over 500,000 students
- All India Rank 16 in AIEEE 2010 among over 1,000,000 students
- Merit certificate in 3/5 subjects for being among the top 0.1% nationwide (by CBSE in 2010)
- Recipient of the prestigious National Talent Search Examination(NTSE)-2008 scholarship