

Matthew K. Mukerjee

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EDUCATION

Carnegie Mellon University, Pittsburgh, PA

Ph.D., Computer Science, *August 2011 – May 2018*

- Advisor: Srinivasan Seshan
- Thesis: *Eliminating Adverse Control Plane Interactions in Independent Network Systems*

M.S., Computer Science, *August 2011 – May 2015*

- Advisor: Srinivasan Seshan

Cornell University, Ithaca, NY

M.Eng., Computer Science, *August 2010 – May 2011*

- Advisor: Daniel Freedman
- Project: *Cause and effect of emergent packet chains on high-speed wide-area networks*

Dartmouth College, Hanover, NH

B.A., Cum Laude *September 2006 – June 2010*

Major: Computer Science – High Honors

- Advisor: Andrew T. Campbell and Tanzeem Choudhury
- Thesis: *NeuroPhone: Brain-Mobile Phone Interface using a Wireless EEG Headset*

Major: Asian and Middle Eastern Studies (Japan)

- Advisor: James Dorsey

RESEARCH INTERESTS

computer networks: datacenter networks, video / content delivery,
network architecture, mobile

AWARDS

Graduate

- ACM CoNEXT Best Paper Award, 2017
- ACM SIGCOMM Best Paper Award, 2014
- Pradeep Sindhu Computer Science Fellowship, *2013-2014*

Undergraduate

- Second Honor Group, 2008 - 2010
- Kemeny Prize (Second Prize in Individual Innovation / Design): “NeuroPhone: Brain-Mobile Phone Interface using a Wireless EEG Headset,” *2010*
- Kemeny Prize (First-Place in Team Innovation): “Xenotarsix: A Yalnix-based Operating System with Threads, Caching to Disk, and Additional Functionality,” *2009*
- Francis L. Town Scientific Prize for Computer Science, *2008*
- Academic Citations in Coursework: *Honors Thesis Research, Operating Systems, Computer Architecture, Software Design and Implementation, and Intro to CS.*

INDUSTRY

Nefeli Networks, Berkeley, CA

Software Engineer

July 2018 – Present

Network Function Virtualization (NFV) startup out of UC Berkeley.

Google, Seattle, WA

Software Engineering Intern

May 2012 – August 2012

Worked with Ben Greenstein in Matt Welsh’s “Mobile Speed” group building and experimenting with an A/B testing framework for a mobile web data compression proxy (Flywheel, NSDI ’15) to understand the effects of combinations of optimizations.

PUBLICATIONS

- [1] **Mukerjee, M. K.**, I. N. Bozkurt, D. Ray, B. Maggs, S. Seshan, H. Zhang. Redesigning CDN-Broker Interactions for Improved Content Delivery. *CoNEXT 2017*, December 2017. **Best Paper Award**
- [2] C. Li, **M. K. Mukerjee**, D. G. Andersen, S. Seshan, M. Kaminsky, G. Porter, A. C. Snoeren. Using Indirect Routing to Recover from Network Traffic Scheduling Estimation Error. *ANCS 2017*, May 2017.
- [3] **Mukerjee, M. K.**, I. N. Bozkurt, B. Maggs, S. Seshan, H. Zhang. The Impact of Brokers on the Future of Content Delivery. *HotNets 2016*, November 2016.
- [4] Liu, H., **M. K. Mukerjee**, C. Li, N. Feltman, G. Papen, S. Savage, S. Seshan, G. M. Voelker, D. G. Andersen, M. Kaminsky, G. Porter, A. C. Snoeren. Scheduling Techniques for Hybrid Circuit/Packet Networks. *CoNEXT 2015*, December 2015. **Best Paper Nominee**
- [5] **Mukerjee, M. K.**, D. Naylor, J. Jiang, D. Han, S. Seshan, H. Zhang. Practical, Real-time Centralized Control for CDN-based Live Video Delivery. *SIGCOMM 2015*, August 2015.
- [6] Wang, R., **M. K. Mukerjee**, M. Veloso, S. Seshan. Wireless Map-Based Handoffs for Mobile Robots. *ICRA 2015*, May 2015.
- [7] Naylor, D., **M. K. Mukerjee**, P. Steenkiste. Balancing Accountability and Privacy in the Network. *SIGCOMM 2014*, August 2014. **Best Paper Award**
- [8] Naylor, D., **M. K. Mukerjee**, P. Agyapong, R. Grandl, R. Kang, M. Machado, S. Brown, C. Doucette, H. Hsiao, D. Han, T. Kim, H. Lim, C. Ovon, D. Zhou, S. Lee, Y. Lin, C. Stuart, D. Barrett, A. Akella, D. Andersen, J. Byers, L. Dabish, M. Kaminsky, S. Kiesler, J. Peha, A. Perrig, S. Seshan, M. Sirbu, P. Steenkiste. XIA: Architecting a More Trustworthy and Evolvable Internet. *ACM SIGCOMM Computer Communication Review*, July 2014.
- [9] **Mukerjee, M. K.**, D. Han, S. Seshan, and P. Steenkiste. Understanding Trade-offs in Incremental Deployment of New Network Architectures. *CoNEXT 2013*, December 2013.
- [10] Campbell, A. T., T. Choudhury, S. Hu, H. Lu, **M. K. Mukerjee**, M. Rabbi, R. D. S Raizada. NeuroPhone: Brain-Mobile Phone Interface using a Wireless EEG Headset. *SIGCOMM 2010 – MobiHeld 2010*, August 2010.
- [11] *Poster*: Ware, R., **M. K. Mukerjee**, J. Sherry, S. Seshan. Battle for Bandwidth: Fairness and Heterogeneous Congestion Control. *NSDI 2018*, April 2018.
- [12] *Invited Poster*: VDX: A Marketplace for Video Delivery. *Google Networking Research Summit*, February 2017.

INVITED TALKS, POSTERS, AND DEMOS

- [13] *Invited Talk*: Practical, Real-time Centralized Control for CDN-based Live Video Delivery. *DIMACS NSF Algorithms in the Field (AiTF) Workshop on Algorithms for Software-Defined Networking*, June 2016.
- [14] *Invited Talk*: Practical, Real-time Centralized Control for CDN-based Live Video Delivery. *Microsoft Research Graduate Student Summit on Mobility, Systems, and Networking*, February 2016.
- [15] *Invited Tutorial / Demo / Poster*: **Mukerjee, M. K.**, Y. Wu, D. Barrett, S. Seshan. Tutorial: Introduction to XIA Future Internet Architecture Protocol Suite. *GENI Engineering Conference 21*, October 2014.
- [16] *Poster*: **Mukerjee, M. K.**, J. Hong, J. Jiang, D. Naylor, D. Han, S. Seshan, H. Zhang. Enabling Near Real-Time Central Control for Live Video Delivery in CDNs. *SIGCOMM 2014*, August 2014.
- [17] *Invited Presentation / Demo*: **Mukerjee, M. K.**, D. Naylor, P. Steenkiste, D. Andersen, D. Eckhardt, S. Kiesler, J. Peha, A. Perrig, S. Seshan, M. Sirbu, H. Zhang, A. Akella, J. Byers. eXpressive Internet Architecture. *GENI Engineering Conference 15*, October 2012.
- [18] *Demo*: Grandl, R., D. Han, S. B. Lee, H. Lim, M. Machado, **M. K. Mukerjee**, D. Naylor. Supporting Network Evolution and Incremental Deployment with XIA. *SIGCOMM 2012*, August 2012.
- [19] *Invited Poster*: Naylor, D., D. Han, **M. K. Mukerjee**, S. B. Lee, P. Steenkiste. XIA: An Evolvable, Expressive, and Secure Internet Architecture. *GENI Engineering Conference 12*, November 2011.

PROFESSIONAL
ACTIVITIES

- NSDI 2018 External Reviewer
- ANCS 2016 Poster Selection Committee
- National Science Foundation NeTS Early-Career Investigators (NeTS-ECI) Workshop. By Invitation Only. July 2015.

TEACHING

Carnegie Mellon University

Teaching Assistant:

Spring 2016	Comp. Music Sys. and Info. Proc.	<i>Roger Dannenberg</i>
Fall 2013	Undergraduate Networks	<i>Peter Steenkiste</i>
Fall 2012	Graduate Networks	<i>Peter Steenkiste</i>

PRESS COVERAGE

- The Dartmouth. 2011. New smartphone reads callers' neural signals
- CBS Sunday Morning. 2011. The Next Step in Bionics
- New York Times Magazine. 2011. The Cyborg in Us All
- Dartmouth Now. 2010. Dartmouth Professors Receive NSF Grant for Neural Phone
- The Dartmouth. 2010. Prof.'s research inspires 'EyePhone'
- MIT Technology Review. 2010. Mobile Phone Mind Control

OTHER
INTERESTS

playing music (electric bass, guitar, piano), audio engineering (recording and mixing), video games, Japanese language and culture.

REFERENCES

Srinivasan Seshan

Professor / Head

Computer Science

Carnegie Mellon University

srini AT cs.cmu.edu

Peter Steenkiste

Professor

CS and ECE Departments

Carnegie Mellon University

prs AT cs.cmu.edu

Bruce M. Maggs

Professor / Vice President

Computer Science / Research

Duke University / Akamai Technologies

bmm AT cs.duke.edu

Alex C. Snoeren

Professor

Computer Science and Engineering

University of California, San Diego

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