Matthew K. Mukerjee

Berkeley, CA, USA

email: Matthew.Mukerjee@gmail.com
web: mattmukerjee.com

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, *2*008 - 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] Ware, R., **M. K. Mukerjee**, J. Sherry, S. Seshan. Beyond Jains Fairness Index: Setting the Bar For The Deployment of Congestion Control Algorithms. *HotNets 2019*, November 2019.

[2] Ware, R., **M. K. Mukerjee**, J. Sherry, S. Seshan. Modeling BBR's Interactions with Loss-Based Congestion Control. *IMC 2019*, October 2019.

[3] **Mukerjee, M. K.**, C. Canel, D. Kim, S. Seshan. Adapting TCP for Reconfigurable Datacenter Networks. *OptSys 2019*, August 2019.

[4] **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**

[5] 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.

[6] **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.

[7] 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**

[8] **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.

[9] Wang, R., **M. K. Mukerjee**, M. Veloso, S. Seshan. Wireless Map-Based Handoffs for Mobile Robots. *ICRA 2015*, May 2015.

[10] Naylor, D., **M. K. Mukerjee**, P. Steenkiste. Balancing Accountability and Privacy in the Network. *SIGCOMM 2014*, August 2014. **Best Paper Award**

[11] 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. Dabbish, 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.

[12] **Mukerjee, M. K.**, D. Han, S. Seshan, and P. Steenkiste. Understanding Tradeoffs in Incremental Deployment of New Network Architectures. *CoNEXT 2013*, December 2013.

[13] 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.

Invited Talks, Posters, and Demos

[14] *Poster:* Ware, R., **M. K. Mukerjee**, J. Sherry, S. Seshan. Battle for Bandwidth: Fairness and Heterogeneous Congestion Control. *NSDI 2018*, April 2018.

[15] *Invited Poster:* VDX: A Marketplace for Video Delivery. *Google Networking Research Summit*, February 2017.

[16] *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.

[17] *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.

[18] *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.

[19] *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.

[20] *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.

[21] *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.

[22] *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.**	*Roger Dannenberg*
Fall 2013	**Undergraduate Networks**	*Peter Steenkiste*
Fall 2012	**Graduate Networks**	*Peter Steenkiste*

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
snoeren AT cs.ucsd.edu