

## Ravi Netravali

482 Engineering VI; 404 Westwood Plaza, Los Angeles, California 90095  
ravi@cs.ucla.edu; 310-794-4291; <https://cs.ucla.edu/~ravi/>

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                   |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| Research Interests | Computer Networks and Systems, Distributed Systems and Applications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                   |
| Employment         | <ul style="list-style-type: none"><li>• <b>UCLA</b><br/>Assistant Professor of Computer Science</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | January 2019-                                     |
| Education          | <ul style="list-style-type: none"><li>• <b>Massachusetts Institute of Technology</b><br/>Ph.D. in Computer Science<br/>Advisors: Hari Balakrishnan and James Mickens</li><li>• <b>Massachusetts Institute of Technology</b><br/>S.M. in Computer Science<br/>Advisor: Hari Balakrishnan</li><li>• <b>Columbia University</b><br/>B.S. in Electrical Engineering with honors<br/>Advisor: Shih-Fu Chang</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2014-2018<br>2012-2014<br>2008-2012               |
| Awards             | <ul style="list-style-type: none"><li>• <b>NSF CAREER Award</b></li><li>• <b>Google Faculty Research Award</b></li><li>• <b>ACM SoCC Best Paper Award</b></li><li>• <b>IRTF Applied Networking Research Prize</b></li><li>• <b>Qualcomm Innovation Fellowship</b></li><li>• <b>Irwin Jacobs Presidential Fellowship, MIT</b></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2020<br>2020<br>2019<br>2018<br>2017<br>2012-2013 |
| Publications       | <b>Conference and Workshop Papers</b> <ul style="list-style-type: none"><li>• <b>Alohamora: Reviving HTTP/2 Push and Preload by Adapting Policies On the Fly</b><br/>Nikhil Kansal, Murali Ramanujam, Ravi Netravali<br/>USENIX NSDI 2021</li><li>• <b>Oblique: Accelerating Page Loads Using Symbolic Execution</b><br/>Ronny Ko, Blake Loring, Ravi Netravali, James Mickens<br/>USENIX NSDI 2021</li><li>• <b>Continuous Prefetch for Interactive Data Applications</b><br/>Haneen Mohammed, Ziyun Wei, Eugene Wu, Ravi Netravali<br/>VLDB 2020</li><li>• <b>Reducto: On-Camera Filtering for Resource-Efficient Real-Time Video Analytics</b><br/>Yuanqi Li, Arthi Padmanabhan, Pengzhan Zhao, Yufei Wang, Harry Xu, Ravi Netravali<br/>ACM SIGCOMM 2020</li><li>• <b>Physical Visualization Design (demo)</b><br/>Lana Ramjit, Zhaoning Kong, Ravi Netravali, Eugene Wu<br/>ACM SIGMOD 2020</li><li>• <b>Fawkes: Faster Mobile Page Loads via App-Inspired Static Templating</b><br/>Shaghayegh Mardani, Mayank Singh, Ravi Netravali<br/>USENIX NSDI 2020</li><li>• <b>ABC: A Simple Explicit Congestion Controller for Wireless Networks</b><br/>Prateesh Goyal, Anup Agarwal, Ravi Netravali, Mohammad Alizadeh, Hari Balakrishnan<br/>USENIX NSDI 2020</li></ul> |                                                   |

- **Acorn: Aggressive Result Caching in Distributed Data Processing Frameworks**  
Lana Ramjit, Matteo Interlandi, Eugene Wu, Ravi Netravali  
ACM SoCC 2019
- **A System-Wide Debugging Assistant Powered by Natural Language Processing**  
Pradeep Dogga, Karthik Narasimhan, Anirudh Sivaraman, Ravi Netravali  
ACM SoCC 2019
- **Reverb: Speculative Debugging for Web Applications**  
Ravi Netravali, James Mickens  
ACM SoCC 2019
- **Edge-based Transcoding for Adaptive Live Video Streaming**  
Pradeep Dogga, Sandip Chakraborty, Subrata Mitra, Ravi Netravali  
USENIX HotEdge 2019
- **Secure Incentivization for Decentralized Content Delivery**  
Prateesh Goyal, Ravi Netravali, Mohammed Alizadeh, Hari Balakrishnan  
USENIX HotEdge 2019
- **WatchTower: Fast, Secure Mobile Page Loads Using Remote Dependency Resolution**  
Ravi Netravali, Anirudh Sivaraman, James Mickens, Hari Balakrishnan  
ACM MobiSys 2019
- **Vesper: Measuring Time-to-Interactivity for Modern Web Pages**  
Ravi Netravali, Vikram Nathan, James Mickens, Hari Balakrishnan  
USENIX NSDI 2018
- **Prophecy: Accelerating Mobile Page Loads Using Final-state Write Logs**  
Ravi Netravali, James Mickens  
USENIX NSDI 2018
- **Remote-Control Caching: Proxy-based URL Rewriting to Decrease Mobile Browsing Bandwidth**  
Ravi Netravali, James Mickens  
ACM HotMobile 2018
- **Neural Adaptive Video Streaming with Pensieve**  
Hongzi Mao, Ravi Netravali, Mohammad Alizadeh  
ACM SIGCOMM 2017
- **Vroom: Accelerating the Mobile Web with Server-Aided Dependency Resolution**  
Vaspol Ruamviboonsuk, Ravi Netravali, Mohammad Uluyol, Harsha Madhyastha  
ACM SIGCOMM 2017
- **Polaris: Faster Page Loads Using Fine-grained Dependency Tracking**  
Ravi Netravali, Ameesh Goyal, James Mickens, Hari Balakrishnan  
USENIX NSDI 2016
- **Room-Area Networks**  
Peter Iannucci, Ravi Netravali, Ameesh Goyal, Hari Balakrishnan  
ACM HotNets 2015
- **Mahimahi: Accurate Record-and-Replay for HTTP**  
Ravi Netravali, Anirudh Sivaraman, Keith Winstein, Somak Das, Ameesh Goyal, James Mickens, Hari Balakrishnan  
USENIX Annual Technical Conference (ATC) 2015
- **WiFi, LTE, or Both? Measuring Multi-homed Wireless Internet Performance**  
Shuo Deng, Ravi Netravali, Anirudh Sivaraman, Hari Balakrishnan  
ACM IMC 2014
- **Authenticating a Mobile Device's Location Using Voice Signatures**

Jack Brassil, Ravi Netravali, Stuart Haber, Pratyusa Manadhata, Prasad Rao  
IEEE WiMob 2012

**Journal Papers**

- **Network architecture in the age of programmability**  
Anirudh Sivaraman, Thomas Mason, Aurojit Panda, Ravi Netravali, and Sai Anirudh Kondaveeti  
ACM SIGCOMM CCR Editorial
- **Traffic Signature-Based Mobile Device Location Authentication**  
Jack Brassil, Pratyusa Manadhata, Ravi Netravali  
IEEE Transactions on Mobile Computing, Vol. 13, 2013
- **Multi-Sensor Fusion of Infrared & Electro-Optic Signals for Night Images**  
Xiaopeng Huang, Ravi Netravali, Hong Man, Victor Lawrence  
MDPI Sensors, Vol. 12, 2012

- |                            |                                                                                                                                                |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Research Experience</b> | • <b>Research Intern, HP Research Labs</b> 2011-2012<br>Networking and Mobility Laboratory, Princeton, NJ<br>Advisor: Jack Brassil             |
|                            | • <b>Research Assistant, Columbia University</b> 2010-2012<br>Digital Video and Multimedia Lab<br>Advisor: Shih-Fu Chang                       |
|                            | • <b>Research Assistant, Stevens Institute of Technology</b> 2005-2012<br>Center for Intelligent Networked Systems<br>Advisor: Victor Lawrence |

- |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Funding</b> | <ul style="list-style-type: none"><li>• NSF CNS-2006437: NeTS: Small: Not All Cameras are Created Equal: Systems Support for Highly Adaptive Video Analytics Pipelines (\$500,000, 2020-2023), PI</li><li>• NSF CNS-1943621: CAREER: Adaptive Web Execution: Supporting Billions of Diverse Users by Adapting Execution to Available Resources (\$500,000, 2020-2025), PI</li><li>• Google Faculty Research Award (\$80,000, 2020-2021), PI</li><li>• NSF CNS-1901510: NeTS: Large: Network Design Automation (\$1,999,404, 2019-2023), Co-PI</li><li>• UCLA Council on Research Faculty Award (\$7,800, 2019-2020), PI</li></ul> |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- |                 |                                                                                                                                                                                                                                                      |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Teaching</b> | <ul style="list-style-type: none"><li>• CS239: ML-driven Video Analytics Systems (Winter 2020, Fall 2020)</li><li>• CS219: Web and Mobile Systems (Winter 2019, Fall 2019)</li><li>• CS134: Distributed Systems (Spring 2019, Spring 2020)</li></ul> |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Service</b> | <ul style="list-style-type: none"><li>• <b>Program Committee Member:</b> ACM MobiCom 2021, WWW 2021, USENIX NSDI 2021, USENIX NSDI 2020, USENIX ATC 2020</li><li>• <b>Topics Preview Co-Chair:</b> ACM SIGCOMM 2020</li><li>• <b>Poster Co-Chair:</b> USENIX NSDI 2020</li><li>• <b>External Reviewer:</b> USENIX NSDI (2016-2019), ACM HotNets (2019), ACM MobiCom (2018), ACM SIGCOMM (2016)</li><li>• <b>Reviewer:</b> IEEE Transactions on Parallel and Distributed Systems, IEEE/ACM Transactions on Networking</li></ul> |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|