Ranysha Ware

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Swarthmore College
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Website
Google Scholar

Academic Appointments

- **Assistant Professor**, Swarthmore College (2025 - present)
  Computer Science Department
- **Postdoctoral Teaching Fellow**, Carnegie Mellon University (2024 - 2025)
  Computer Science Department

Education

- **Ph.D. in Computer Science**, Carnegie Mellon University, August 2024
  Co-Advisors: Justine Sherry, Srinivasan Seshan
  Thesis: Battle for Bandwidth: On The Deployability of New Congestion Control Algorithms
- **M.S. in Computer Science**, University of Massachusetts Amherst, May 2015
- **B.S. in Computer Science**, State University of New York at New Paltz, May 2013

Honors and Awards

- **SIGCOMM Doctoral Dissertation Award** (2025)
- **IRTF Applied Networking Research Prize** (2020)
- **Facebook Emerging Scholars Award** (2019)
- **SUNY New Paltz 40 Under Forty Alumni Award** (2017)
- **National GEM Consortium PhD Fellowship** (2017)
- **National GEM Consortium MS Fellowship** (2013)
- **SUNY New Paltz Outstanding Graduate** (2013)
- **LSAMP Outstanding Scholar's Award** (2010, 2013)

Publications

1. Darshil D. Kaneria, **Ranysha Ware**, and Srinivasan Seshan. 2025. VCCAnalyzer: Identifying Congestion Control Algorithms used by Video Streaming Services. Proc. ACM Netw. 3, CoNEXT4 (**CoNEXT 2025**), Article 32 (December 2025), 11 pages.
2. Justine Sherry, **Ranysha Ware**, Isabel Suizo, Srinivasan Seshan, Adithya Abraham Philip, Congestion Safety Audits for Internet Services (August 1, 2025). The 53rd Research Conference On Communciations, Information and Internet Policy (**TPRC-53**).
3. Margarida Ferreira, **Ranysha Ware**, Yash Kothari, Ins Lynce, Ruben Martins, Akshay Narayan, Justine Sherry. 2024. Reverse-Engineering Congestion Control Algorithm Behavior. In Proceedings of the 2024 ACM Internet Measurement Conference (**IMC '24**), November 4-6, 2024, Madrid, Spain. Association for Computing Machinery, New York, NY, USA, 401-414.
4. **Ranysha Ware**, Adithya Abraham Philip, Nicholas Hungria, Yash Kothari, Justine Sherry, and Srinivasan Seshan. 2024. CCAnalyzer: An Efficient and Nearly-Passive Congestion Control Classifier. In Proceedings of the ACM SIGCOMM 2024 Conference (**SIGCOMM '24**). Association for Computing Machinery, New York, NY, USA, 181-196.

5. Adithya Abraham Philip, Rukshani Athapathu, **Ranysha Ware**, Fabian Francis Mkocheko, Alexis Schlomer, Mengrou Shou, Zili Meng, Srinivasan Seshan, and Justine Sherry. 2024. Prudentia: Findings of an Internet Fairness Watchdog. In Proceedings of the ACM SIGCOMM 2024 Conference (**SIGCOMM '24**). Association for Computing Machinery, New York, NY, USA, 506-520.
6. Adithya Abraham Philip, **Ranysha Ware**, Rukshani Athapathu, Justine Sherry, and Vyas Sekar. 2021. Revisiting TCP congestion control throughput models & fairness properties at scale. In Proceedings of the 21st ACM Internet Measurement Conference (**IMC '21**). Association for Computing Machinery, New York, NY, USA, 96-103.
7. **Ranysha Ware**, Matthew K. Mukerjee, Srinivasan Seshan, and Justine Sherry. 2019. Beyond Jain's Fairness Index: Setting the Bar For The Deployment of Congestion Control Algorithms. In Proceedings of the 18th ACM Workshop on Hot Topics in Networks (**HotNets '19**). Association for Computing Machinery, New York, NY, USA, 17-24.

   🏆 **IRTF Applied Networking Research Prize**
8. **Ranysha Ware**, Matthew K. Mukerjee, Srinivasan Seshan, and Justine Sherry. 2019. Modeling BBR's Interactions with Loss-Based Congestion Control. In Proceedings of the Internet Measurement Conference (**IMC '19**). Association for Computing Machinery, New York, NY, USA, 137-143.

Posters

- Rukshani Athapathu, **Ranysha Ware**, Aditya Abraham Philip, Srinivasan Seshan, Justine Sherry. A Watchdog Service for Measuring Congestion Control Harm on the Internet. N2Women '20, ACM SIGCOMM, Aug 2020
- **Invited:** Joshua Slaughter, **Ranysha Ware**, Srini Seshan, and Justine Sherry. Using Non-Congestive Loss to Differentiate TCP Reno and TCP Westwood. CMU ISR REUSE Poster Session, Aug 2019
- **Invited:** Monica Pardeshi, **Ranysha Ware**, and Justine Sherry. Reverse Engineering FastTCP. CMU Spring 2019 Meeting of the Minds Symposium, May 2019
- **Invited: Ranysha Ware**, Anne Kholbrenner, Matthew K. Mukerjee, Srini Seshan, and Justine Sherry. Battle for Bandwidth: Fairness and Heterogeneous Congestion Control. CRA URMD Workshop 2019, March 2019
- **Invited: Ranysha Ware**, Anne Kholbrenner, Matthew K. Mukerjee, S. Seshan, and J. Sherry. Battle for Bandwidth: Fairness and Heterogeneous Congestion Control. Google Networking Research Summit, March 2019
- **Ranysha Ware**, Matthew K. Mukerjee, Justine Sherry, Srini Seshan. Battle for Bandwidth: Fairness and Heterogeneous Congestion Control. NSDI 2018, April 2018.

Invited External Talks

- **Battle for Bandwidth: On The Deployability of New Congestion Control Algorithms.** *Wellesley College*, Februrary 2025
- **Battle for Bandwidth: On The Deployability of New Congestion Control Algorithms.** Rising Stars in Computer Science Lecture Series, *UMass Amherst*, November 2024
- **Battle for Bandwidth: Evaluating Congestion Control Deployability For The Internet.** *MIT*, July 2021
- **Battle for Bandwidth: Evaluating Congestion Control Deployability For The Internet.** *UC Santa Cruz*, May 2021
- **Beyond Jain's Fairness Index: Setting the Bar For The Deployment of Congestion Control Algorithms.** *IETF-109*, November 2020
- **Battle for Bandwidth: Fairness and Heterogeneous Congestion Control.** *Facebook Networking & Communications Faculty Summit*, June 2019

Teaching Experience

- **Instructor**, Intro to Computer Systems (CS 31), Swarthmore College
  Semesters: Spring 2026
  Course Website: https://www.cs.swarthmore.edu/~rware/cs31/s26/
  Led lecture and co-led 1 lab section. (20 students)
- **Instructor**, Computer Networks (CS 43), Swarthmore College
  Semesters: Fall 2025
  Course Website: https://www.cs.swarthmore.edu/~rware/cs43/f25/
  Led lecture and 1 lab section. (20 students)
- **Instructor**, Introduction to Computer Systems (15-213), Carnegie Mellon University
  Semesters: Spring 2025
  Course Website: https://www.cs.cmu.edu/afs/cs/academic/class/15213-s25/www/
  Co-instructor with Professor David Andersen and Professor Nathan Beckmann. (∼250 students, 17 TAs)
- **Instructor**, Principles of Computing (15-110), Carnegie Mellon University
  Semesters: Fall 2024
  Course Website: https://www.cs.cmu.edu/~15110-f24/
  Co-instructor with Professor Mike Taylor. Led lecture section 2. (∼250 students, ∼30 TAs)
- **Instructor**, Fundamentals of Programming and Computer Science (15-112), Carnegie Mellon University
  Semesters: Summer 2023
  Course Website: https://www.cs.cmu.edu/~112-n23/
  Created and led daily lectures for 6 weeks. (∼80 students, ∼20 TAs)
- **Teaching Assistant**, Fundamentals of Programming and Computer Science (15-112), Carnegie Mellon University
  Semesters: Spring 2023
  Led weekly recitations, held weekly office hours, and graded assignments.
- **Teaching Assistant**, Research and Innovation in Computer Science (07-300), Carnegie Mellon University
  Semesters: Fall 2022
  Only TA. Led weekly recitations, created rubrics and graded assignments.
- **Teaching Assistant & Guest Lecturer**, Computer Networks (15-441/641), Carnegie Mellon University
  Semesters: Spring 2019
  Led weekly recitations, held weekly office hours, and graded assignments.
  Led guest lecture: "TCP Part 2: Performance, Fairness, & Modern Congestion Controllers."
- **Guest Lecturer**, Computer Networks (15-441/641), Carnegie Mellon University
  Semesters: Fall 2017
  Led guest lecture: "Battle for Bandwidth: Fairness and Congestion Control Heterogeneity."
- **Guest Lecturer**, Machine Learning (SDS 293), Smith College
  Semesters: Fall 2016
  Led guest lecture: "Data Wrangling with Python".
- **Grader**, Programming with Data Structures (CMPSCI 187), UMass Amherst
  Semesters: Fall 2013, Spring 2014
  Graded homework and exams.
- **Tutor**, SUNY New Paltz, Mathematics Laboratory
  Semesters: Fall 2010, Spring 2011, Fall 2011, Spring 2012, Fall 2012, Spring 2013
  Assisted students in walk-in tutoring center with algebra and calculus courses.
- **Tutor**, SUNY New Paltz, AMP/CSTEP Community
  Semesters: Spring 2010, Fall 2010, Spring 2011, Fall 2011, Spring 2012, Fall 2012, Spring 2013
  Tutored underrepresented STEM students taking calculus and computer science courses.

Research Experience

- **Research Assistant**, Carnegie Mellon University
  Aug 2017 - August 2024
  Leading research projects on fairness and congestion control heterogeneity.
- **Research Intern**, Microsoft Research
  May 2019 - August 2019
  Studied how to make RDMA work well in datacenter networks with 100 Gbps, 100 meter long links.
- **Associate Technical Staff**, MIT Lincoln Laboratory, Cyber Analytics and Decision Systems Group
  Jun 2015 - Aug 2017
  Built big data analysis pipelines for network logs and open-source cyber threats for predictive modeling and analytics for cybersecurity.
- **Research Assistant**, UMass Amherst
  Aug 2014 - May 2015
  Developed and benchmarked an efficient implementations of a theoretically optimal short division algorithm on various parallel architectures.
- **Summer Research Intern**, MIT Lincoln Laboratory, Cyber Systems and Technology Group
  May 2014 - Aug 2014
  Designed and developed a user-friendly tool for end-to-end-management and analysis of a dynamic cyber-defense prototype.
- **Summer Research Intern**, MIT Lincoln Laboratory, Computing and Analytics Group
  Jun 2013 - Aug 2013
  Designed and developed a modular software framework for graph signal processing in million-edge graphs.
- **Research Assistant**, SUNY New Paltz
  Sep 2011 - Dec 2011
  Explored applications of the Gaussian Quadrature Rule to multivariate problems.

Advising and Mentoring

Undergraduate and master student projects supervised at CMU.

- 2018: Anne Kohlbrenner, now Assistant Teaching Professor at CMU
- 2019: Monica Pardeshi, CS MS at CMU
- 2019: Megan Yu, now Senior Software Engineer at Oscar Health
- 2019: Joshua Slaughter (CMU ISR REUSE student from Univ. Maryland Baltimore County), now PhD candidate studying Biomedical Artificial Intelligence at the University of Edinburg
- 2019-2020: Rukshani Athapathu, now PhD candidate at UCSD
- 2024: Nicholas Hungria, now Software Engineer at Meta
- 2024-2025: Darshil Kaneria, advised MS Thesis: *Congestion Control Identification for Video Streaming Platforms*, now Software Engineer at Amazon

Service

- **IMC Student Workshop, Reviewer** (2025)
- **CMU Computer Science Department Faculty Hiring Committee** (2024)
- **CMU Academic Advising Award Committee** (2024)
- **Introductory Programming in Python through Robotics Workshop Co-Facilitator**, Black in Robotics (June 2023, July/August 2024, July 2025)
- **CMU SCS Committee For Improving Doctoral Student Advising** (2021)

- **CMU Counseling and Psychological Services (CaPs) Student Advisory Board** (2021)
- **CMU ISR REUSE Admissions Committee** (2020)
- **Python Introductory Workshop Co-Facilitator**, Carnegie Library of Pittsburgh (July - August 2018)
- **Network Reading Group Coordinator**, Carnegie Mellon University (Fall 2017 - Summer 2018)
- **Membership Chair**, GEM Alumni Association (2015)

Media Coverage

- **Asia Pacific Network Information Centre (APNIC) blog:** Modelling BBRs interactions with loss-based congestion control. January 24, 2020.
- **Packet Pushers podcast:** Heavy Networking 489: Is BBR Too Unfair An Algorithm For The Internet?. November 27, 2019.
- **Vice Motherboard:** Google's network congestion control algorithm isn't fair, researchers say. October 31, 2019
- **Wired Italian:** Un algoritmo di Google "monopolizza" il traffico web. October 28, 2019.
- **Telegraph:** Google algorithm 'hogs' internet traffic, researchers show. October 10, 2019.

Last updated: February 2026