

# Ranysha Ware

PhD Student  
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## 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

- **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)
- **MS Presentation Competition, 2nd Place**, GEM Annual Board Meeting and Conference (2014)
- **National GEM Consortium MS Fellowship** (2013)
- **SUNY New Paltz Outstanding Graduate** (2013)
- **LSAMP Outstanding Scholar's Award** (2010, 2013)

## Referred Publications

- [1] **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 (ACM SIGCOMM '24). Association for Computing Machinery, New York, NY, USA, 181196.
- [2] Adithya Abraham Philip, Rukshani Athapathu, **Ranysha Ware**, Fabian Francis Mkocheke, 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 (ACM SIGCOMM '24). Association for Computing Machinery, New York, NY, USA, 506520.
- [3] 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, 96103.
- [3] **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, 1724.  
🏆 **IRTF Applied Networking Research Prize**
- [4] **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, 137143.

## Posters

- [3] **Invited:** J. Slaughter, **R. Ware**, S. Seshan, and J. Sherry. Using Non-Congestive Loss to Differentiate TCP Reno and TCP Westwood. CMU ISR REUSE Poster Session, Aug 2019
- [4] **Invited:** M. Pardeshi, **R. Ware**, and J. Sherry. Reverse Engineering FastTCP. CMU Spring 2019 Meeting of the Minds Symposium, May 2019
- [5] **Invited:** **R. Ware**, A. Kholbrenner, M. K. Mukerjee, S. Seshan, and J. Sherry. Battle for Bandwidth: Fairness and Heterogeneous Congestion Control. CRA URMD Workshop 2019, March 2019
- [6] **Invited:** **R. Ware**, A. Kholbrenner, M. K. Mukerjee, S. Seshan, and J. Sherry. Battle for Bandwidth: Fairness and Heterogeneous Congestion Control. Google Networking Research Summit, March 2019
- [7] **R. Ware**, M. K. Mukerjee, J. Sherry, S. Seshan. Battle for Bandwidth: Fairness and Heterogeneous Congestion Control. NSDI 2018, April 2018.

## Invited External Talks

- 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
- Battle for Bandwidth: Fairness and Heterogeneous Congestion Control. Facebook Networking & Communications Faculty Summit, June 2019

## Teaching Experience

- **Instructor**, Fundamentals of Programming and Computer Science (15-112), Carnegie Mellon University  
*Semesters:* Summer 2023  
*s Course Website:* <https://www.cs.cmu.edu/~112-n23/>  
Created and lead 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.

## Pedagogical Training

- Completed: **CMU Future Faculty Program**

*See attached "Future Faculty Program" document for longer description and for workshops I attended.*

The Future Faculty Program helps graduate students develop and document their teaching skills in preparation for a faculty career. Participants in this program learn the principles of effective course design and pedagogy through our seminars, receive feedback on their teaching through teaching feedback consultations, and apply what they have learned in completing a course & syllabus design project and a statement of teaching philosophy project.

- CMU Course: **CS Pedagogy (15-890)**

*Course description:* This course is a broad introduction to Computer Science Pedagogy. This course is targeted toward students who are interested in improving their ability to teach computer science and who are interested in the science of teaching and learning. This course is primarily organized like a Ph.D.-level seminar on computer science pedagogy but with an extensive experiential component: Students will get substantial practice developing, implementing, and testing course materials as if the instructor of a college-level computer science course. Students will also gain experience writing and preparing teaching philosophy statements and will have the opportunity to develop and enrich their teaching portfolios for applying in the academic job market.

- CMU Course: **Evidence-Based Teaching in STEM (38-801)**

*Course description:* This course is designed to prepare Ph.D. students from math, science, and engineering disciplines to: (1) teach effectively and efficiently as future faculty members; (2) critically read and apply peer-reviewed, STEM-based educational research; and (3) adapt approaches from the Scholarship of Teaching and Learning (SoTL) to formatively assess student learning and iteratively improve teaching and course design. Together, we will explore the research on teaching and student learning, identifying and challenging our assumptions regarding how college students learn best in science disciplines. Participants will leverage this research to cultivate a diverse toolkit of evidence-based, student-centered strategies for teaching and course design that may be applied to face-to-face, blended, or online courses, both within and across STEM disciplines.

- Attended **SIGSCE TS 2023, Illionis Computer Science Summer Teaching Workshop (2023), SIGSCE TS 2024** (in March 2024)
- Member of **CS Teaching Slack** ([cs-teaching.slack.com](https://cs-teaching.slack.com))  
 A community of CS faculty primarily from North America. I attend monthly meetings.
- Member of **Community for Teaching and CS Education at CMU** ([cmuteachingcommunity.slack.com](https://cmuteachingcommunity.slack.com))  
 A community for teaching and CS Education at CMU. I attend bi-weekly meetings.

## Research Experience

- **Research Assistant**, Carnegie Mellon University  
 Aug 2017 - Present  
 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 cyber security.

- **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 Guassian Quadrature Rule to multivariate problems.

## Advising and Mentoring

*Undergraduate student projects supervised at CMU.*

- 2019: Monica Pardeshi, Megan Yu, Joshua Slaughter (CMU ISR REUSE student from Univ. Maryland Baltimore County)
- 2024: Nicholas Hungria

## Service

- **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)
- **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: August 2024