Prateesh Goyal

Curriculum vitae

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▬▬▬ Education

2016–2021	**Ph.D. in Computer Science**, *Massachussetts Institute of Technology*. GPA – *5.0/5.0*, Advisors – Hari Balakrishnan and Mohammad Alizadeh
2016–2018	**S.M. in Computer Science**, *Massachussetts Institute of Technology*. GPA – *5.0/5.0*, Advisors – Hari Balakrishnan and Mohammad Alizadeh
2012–2016	**B.Tech. in Computer Science with Minor in Statistics**, *IIT Bombay*. GPA – *9.81/10*, highest among graduating students in CS

▬▬▬ Work Experience

2021–present	**Microsoft Research**, *Senior Researcher*, Manager – Dr. Ranveer Chandra.
2016–2021	**MIT**, *Research Assistant*, Managers – Prof. Hari Balakrishnan and Prof. Mohammad Alizadeh.
Summer 2021	**Clockwork Systems, Inc.**, *Research Intern*, Manager – Dr. Deepak Merugu.
Summer 2020	**Intel, Barefoot Switch Division**, *Research Intern*, Manager – Dr. Georgios Nikolaidis.
Summer 2015	**ETH Zurich**, *Research Intern*, Advisor – Prof. Adrian Perrig.
Summer 2014	**IST Austria**, *Research Intern*, Advisor – Prof. Krishnendu Chatterjee.

▬▬▬ Research

Major Publications

1. **Efficient Policy-Rich Rate Enforcement with Phantom Queues**,
   Ammar Tahir, **Prateesh Goyal**, Ilias Marinos, Mike Evans, and Radhika Mittal.
   ACM SIGCOMM 2024. (To Appear)

2. **m3: Accurate Flow-Level Performance Estimation using Machine Learning**,
   Chenning Li, Arash Nasr-Esfahany, Kevin Zhao, Kimia Noorbakhsh, **Prateesh Goyal**,
   Mohammad Alizadeh, and Thomas Anderson.
   ACM SIGCOMM 2024. (To Appear)

3. **DBO: Fairness for Cloud-hosted Financial Exchanges**,
   Eashan Gupta, **Prateesh Goyal**, Ilias Marinos, Chenxingyu Zhao, Radhika Mittal,
   and Ranveer Chandra.
   ACM SIGCOMM 2023. [Paper]

4. **Scalable Tail Latency Estimation for Data Center Networks**,
   Kevin Zhao, **Prateesh Goyal**, Mohammad Alizadeh, and Thomas E. Anderson.
   USENIX NSDI 2023. [Paper]

5. **Rethinking Cloud-hosted Financial Exchanges for Response Time Fairness**,
   Prateesh Goyal, Ilias Marinos, Eashan Gupta, Chaitanya Bandi, Alan Ross, and Ranveer Chandra.
   ACM HotNets 2022. [Paper]

6. **Elasticity Detection: A Building Block for Internet Congestion Control**,
   Prateesh Goyal, Akshay Narayan, Frank Cangialosi, Srinivas Narayana, Mohammad Alizadeh, and Hari Balakrishnan.
   ACM SIGCOMM 2022. [Paper]

7. **Backpressure Flow Control**,
   Prateesh Goyal, Preey Shah, Kevin Zhao, Georgios Nikolaidis, Mohammad Alizadeh, and Thomas E. Anderson.
   USENIX NSDI 2022. [Paper]

8. **Site-to-Site Internet Traffic Control**,
   Frank Cangialosi, Akshay Narayan, **Prateesh Goyal**, Radhika Mittal, Mohammad Alizadeh, and Hari Balakrishnan.
   ACM EuroSys 2021 **(Best Artifact Award)**. [Paper]

9. **Annulus: A Dual Congestion Control Loop for Datacenter and WAN Traffic Aggregates**,
   Ahmed Saeed, Varun Gupta, **Prateesh Goyal**, Milad Sharif, Rong Pan, Mostafa Ammar, Ellen Zegura, Keon Jang, Mohammad Alizadeh, Abdul Kabbani, and Amin Vahdat.
   ACM SIGCOMM 2020. [Paper]

10. **ABC: A Simple Explicit Congestion Controller for Wireless Networks**,
    Prateesh Goyal, Anup Agarwal, Ravi Netravali, Mohammad Alizadeh, and Hari Balakrishnan.
    USENIX NSDI 2020. [Paper]

11. **End-to-End Transport for Video QOE Fairness**,
    Vikram Nathan, Vibhaalakshmi Sivaraman, Ravichandra Addanki, Mehrdad Khani Shirkoohi, **Prateesh Goyal**, and Mohammad Alizadeh.
    ACM SIGCOMM 2019. [Paper]

12. **Secure Incentivization for Decentralized Content Delivery**,
    Prateesh Goyal, Ravi Netravali, Mohammad Alizadeh, and Hari Balakrishnan.
    USENIX HotEdge 2019. [Paper]

13. **Faster Algorithms for Dynamic Algebraic Queries in Basic RSMs with Constant Treewidth**,
    Krishnendu Chatterjee, Amir Kafshdar Goharshady, **Prateesh Goyal**, Rasmus Ibsen-Jensen, and Andreas Pavlogiannis.
    ACM TOPLAS 2019. [Paper]

14. **Restructuring Endpoint Congestion Control**,
    Akshay Narayan, Frank Cangialosi, Deepti Raghavan, **Prateesh Goyal**, Srinivas Narayana, Radhika Mittal, Mohammad Alizadeh, and Hari Balakrishnan.
    ACM SIGCOMM 2018. [Paper]

15. **Rethinking Congestion Control for Cellular Networks**,
    Prateesh Goyal, Mohammad Alizadeh, and Hari Balakrishnan.
    ACM HotNets 2017. [Paper]

16. **The Case for Moving Congestion Control Out of the Datapath**,
    Akshay Narayan, Frank Cangialosi, **Prateesh Goyal**, Srinivas Narayana, Mohammad Alizadeh, and Hari Balakrishnan.
    ACM HotNets 2017. [Paper]

17. **Language-Directed Hardware Design for Network Performance Monitoring**,
    Srinivas Narayana, Anirudh Sivaraman, Vikram Nathan, **Prateesh Goyal**, VenkatArun, Mohammad Alizadeh, Vimalkumar Jeyakumar, and Changhoon Kim.
    ACM SIGCOMM 2017 **(Best Paper Award)**. [Paper]

18. **Faster Algorithms for Algebraic Path Properties in Recursive State Machines with Constant Treewidth**,
    Krishnendu Chatterjee, Rasmus Ibsen-Jensen, Andreas Pavlogiannis, and **Prateesh Goyal**.
    ACM POPL 2015. [Paper]

Patents

19. **Network Interface Device with Flow Control Capability**, *with Intel*,
    Prateesh Goyal, Georgios Nikolaidis, Junggun Lee, Jeremias Blendin, and Yi Li.
    https://patents.google.com/patent/US20220078119A1/en

20. **Response-Time-Based Ordering of Financial Market Trades**, *with Microsoft*,
    Prateesh Goyal, Ilias Marinos, Ranveer Chandra, and Mark Russinovich.
    Patent filed

Preprints

21. **Optimal Congestion Control for Time-varying Wireless Links**,
    Prateesh Goyal, Mohammad Alizadeh, and Thomas E. Anderson.
    https://arxiv.org/pdf/2202.04321.pdf

22. **SWP: Microsecond Network SLOs Without Priorities**,
    Kevin Zhao, **Prateesh Goyal**, Mohammad Alizadeh, and Thomas E. Anderson.
    https://arxiv.org/pdf/2103.01314.pdf

Reviewer for Confernces and Journals

1. **USENIX NSDI 2025**, *Program committee member*.
2. **AFT 2024**, *Program committee member*.
3. **USENIX NSDI 2023**, *Program committee member*.
4. **ACM HotNets 2022**, *Program committee member, Session chair*.
5. **ACM APNET 2022**, *Program committee member*.
6. **IEEE Access 2022**, *Reviewer*.
7. **IEEE TNSM 2022**, *Reviewer*.
8. **IEEE TPDS 2022**, *Reviewer*.
9. **Wiley ETT 2022**, *Reviewer*.
10. **IEEE Access 2021**, *Reviewer*.
11. **USENIX NSDI 2020**, *Topic Preview Presenter*.
12. **IEEE/ACM ToN 2019**, *Reviewer*.

Major Invited Talks

1. **DBO: Fairness for Cloud-hosted Financial Exchanges**, *ACM SIGCOMM 2023*, New York City, NY, USA, Paper presentation.
[Talk]

2. **Rethinking Cloud-hosted Financial Exchanges for Response Time Fairness**, *ACM HotNets 2022*, Austin, TX, USA, Paper presentation.
[Talk]

3. **Elasticity Detection: A Building for Internet Congestion Control**, *ACM SIGCOMM 2022*, Amsterdam, Netherlands, Paper presentation.
[Talk]

4. **Backpressure Flow Control**, *USENIX NSDI 2022*, Renton, WA, USA, Paper presentation.
[Talk]

5. **ABC: A Simple Explicit Congestion Controller for Wireless Networks**, *USENIX NSDI 2020*, Santa Clara, CA, USA, Paper presentation.
[Talk]

6. **Datacenter Network Architectures**, *USENIX NSDI 2020*, Santa Clara, CA, USA, Topic preview session.
[Talk]

7. **Secure Incentivization for Decentralized Content Delivery**, *USENIX HotEdge 2019*, Renton, USA, Paper presentation.

8. **Rethinking Congestion Control for Cellular Networks**, *ACM HotNets 2017*, Palo Alto, CA, USA, Paper presentation.
[Talk]

Accolades

2022   **Nominated for ACM SIGCOMM Doctoral Dissertation Award**.

2021   **Eurosys Best Artifact Award**.

2017   **ACM SIGCOMM Best Paper Award**.

2016   **Institute Silver Medal and Jayati Deshmukh Memorial Gold Medal**, *for securing highest GPA among graduating students in Computer Science at IIT Bombay.*

2013-16   **Institute Academic Award**, *awarded 4 times for academic excellence, by IIT Bombay.*

2012   **All India Rank 53**, *in IIT-JEE among 500,000 candidates.*

2011   **Kishore Vaigyanik Protsahan Yojana (KVPY) Fellowship**, *awarded by the Government of India.*

2008   **National Talent Search Examination (NTSE) Scholarship**, *awarded by NCERT.*

Teaching Experience

2020   **Teaching Assistant, Computer Networks**, *MIT.*

2015   **Teaching Assistant, Computer Programming and Utilization**, *IIT Bombay.*

2014   **Teaching Assistant, Modern Physics**, *IIT Bombay.*