Debopam Bhattacherjee

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Google Scholar profile: https://scholar.google.com/citations?user=hl3YvokAAAAJ
ND Web page: https://nd.ethz.ch

Date of birth: 2 Aug 1987 | **Nationality**: Indian
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Current Research

- **Space Networking**: Debopam works on various networking aspects of low-Earth orbit satellite mega-constellations which are aimed at providing global low-latency Internet coverage. His work ranges from identifying the opportunities and challenges of such dynamic networks, designing topologies towards better performance, publishing simulation and visualization frameworks for enabling research on satellite congestion control and routing, quantifying the impact of inter-satellite connectivity on network performance, to exploring the outlandish idea of ubiquitous in-orbit computing.

- **cISP**: Designing speed-of-light(**c**) **ISP** networks across the US and Europe with point-to-point microwave and fiber communications. Project Web page: cspeed.net

Publications

- **In-orbit computing: an outlandish thought experiment?** [Link]
  - (Debopam Bhattacherjee, Simon Kassing), Melissa Licciardello, Ankit Singla
  - ACM HotNets 2020
- **"Internet from Space" without Inter-satellite Links?** [Link]
  - Yannick Hauri, Debopam Bhattacherjee, Manuel Grossmann, Ankit Singla
  - ACM HotNets 2020
- **Exploring the "Internet from space" with Hypatia** [Link] [Video]
  - (Simon Kassing, Debopam Bhattacherjee), André Baptista Águas, Jens Eirik Saethre, Ankit Singla
  - ACM IMC 2020 [**Best Paper Award**]
- **A bird's eye view of the world's fastest networks** [Link] [Video]
  - Debopam Bhattacherjee,, Waqar Aqeel, Gregory Laughlin, Bruce M. Maggs, Ankit Singla
  - ACM IMC 2020
- **Untangling Header Bidding Lore** [Link]
  - Waqar Aqeel, Debopam Bhattacherjee, Balakrishnan Chandrasekaran, P. Brighten Godfrey, Gregory Laughlin, Bruce Maggs, Ankit Singla
  - PAM 2020 [**Best Dataset Award**]
- **Network topology design at 27,000 km/hour** [Link] [Video (2 min)]

- ○ Debopam Bhattacherjee, Ankit Singla
  - ○ ACM CoNEXT 2019 [**IRTF Applied Networking Research Prize**]
- **Measuring and exploiting the cloud consolidation of the Web** [Link]
  - ○ Debopam Bhattacherjee, Muhammad Tirmazi, Ankit Singla
  - ○ arXiv preprint arXiv:1906.04753 (2019)
- **Watch your step! Detecting stepping stones in programmable networks** [Link]
  - ○ Debopam Bhattacherjee, Andrei Gurtov, Tuomas Aura
  - ○ IEEE ICC Communication and Information Systems Security Symposium 2019
- **Gearing up for the 21st century space race** [Link]
  - ○ Debopam Bhattacherjee, Waqar Aqeel, Ilker Nadi Bozkurt, Anthony Aguirre, Balakrishnan Chandrasekaran, P Godfrey, Gregory Laughlin, Bruce Maggs, Ankit Singla
  - ○ ACM HotNets 2018
- **Dissecting Latency in the Internet's Fiber Infrastructure** [Link]
  - ○ Ilker Nadi Bozkurt, Waqar Aqeel, Debopam Bhattacherjee, Balakrishnan Chandrasekaran, Philip Brighten Godfrey, Gregory Laughlin, Bruce M Maggs, Ankit Singla
  - ○ arXiv preprint arXiv:1811.10737 (2018)
- **cISP: A Speed-of-Light Internet Service Provider** [Link][Video]
  - ○ Debopam Bhattacherjee, Sangeetha Abdu Jyothi, Ilker Nadi Bozkurt, Muhammad Tirmazi, Waqar Aqeel, Anthony Aguirre, Balakrishnan Chandrasekaran, P Godfrey, Gregory P Laughlin, Bruce M Maggs, Ankit Singla
  - ○ arXiv preprint arXiv:1809.10897 (2018)
- **A Cloud-based Content Gathering Network** [Link]
  - ○ Debopam Bhattacherjee, Muhammad Tirmazi, Ankit Singla
  - ○ USENIX HotCloud 2017

Talks

- "In-orbit computing: an outlandish thought experiment?" at ACM HotNets 2020
- "'Internet from Space' without Inter-satellite Links?" at ACM HotNets 2020
- "Exploring the 'Internet from space' with Hypatia" at ACM IMC 2020
- "A bird's eye view of the world's fastest networks" at ACM IMC 2020
- "Network topology design at 27,000 km/hour" at ACM CoNEXT 2019, ETH Zürich Systems Group Retreat 2020, APNIC 50, IETF-109
- "Gearing up for the 21st century space race" at ACM HotNets 2018
- "Speeding up the Internet" at ETH Zürich Systems Group Retreat 2018
- "A Cloud-based Content Gathering Network" at USENIX HotCloud 2017
- "Detection of Stepping Stones in Software Defined Networks" at ETH Zürich, April 2016

Teaching

- [Masters] Future Internet, Spring 2020, Spring 2019, ETH Zürich
- [Bachelors] Computer Networks, Spring 2020, Spring 2019, ETH Zürich
- [Masters] Advanced Computer Networks, Spring 2018, Spring 2017, ETH Zürich
- [Masters] Big Data, Autumn 2016, ETH Zürich
- [Masters] Network Security, Autumn 2015, Aalto University, Finland
- [Masters] Information Security, Autumn 2015, Aalto University, Finland

Supervision (completed)

- Master thesis, M. Grossmann, "Routing for a satellite mega-constellation", ETH Zürich, 2020.

- Master thesis, B. A. André, on simulating LEO satellite networks, ETH Zürich, 2020.
- Master thesis, A. Isac, "Fast Web Browsing Over The Tor Network", ETH Zürich, 2019.
- Master thesis, T. Krebs, "Web browsing with privacy-enhanced man-in-the-middle", ETH Zürich, 2019.
- Master thesis, O. Butz, "Assessing unfairness in the Internet/Web ecosystem", ETH Zürich, 2018.
- Master thesis, J. Purtschert, "Turning Web page delivery upside down: A Content Gathering Network", ETH Zürich, 2018.

- Distributed Systems Laboratory (Master studies; 10 credits), A. Hussain & B. A. André, "LEO satellite constellation topology visualization", ETH Zürich, 2019.
- Distributed Systems Laboratory (Master studies; 10 credits), I. Andrei & U. Andrei, "Topology design for wide-area low-latency networks with multiple media", ETH Zürich, 2018.

- Bachelor thesis, H. Yannick, "Internet from space without inter-satellite laser?", ETH Zürich, 2020.
- Bachelor thesis, J. E. Saethre, "Simulations of Satellite-based low-latency Internet", ETH Zürich, 2019.
- Bachelor thesis, A. Köpe, "Performance of fetching web pages on mobile devices", ETH Zürich, 2019.
- Bachelor thesis, A. Benelli, "Customizing QUIC/HTTP2 for Web servers", ETH Zürich, 2019.
- Bachelor thesis, J. Gallmann, "Turning Web Page Delivery Upside Down: Optimizing a Smart Proxy", ETH Zürich, 2018.
- Bachelor thesis, C. Neukom, "Customizing QUIC for Web servers", ETH Zürich, 2018.

Education
- Erasmus Mundus Master's degree in Security and Mobile Computing (NordSecMob)
  - Track: KTH Royal Institute of Technology, Sweden + Aalto University, Finland
  - Graduation year: 2016
- Bachelor's degree in Computer Science and Engineering
  - Jadavpur University, India
  - Graduation year: 2009

Work Experience
- October 2016 - Present: PhD Candidate at ETH Zürich.
- June 2019 - August 2019: Research Fellow at Internet Architecture group [link], Max Planck Institute for Informatics, Saarbrücken, Germany
- June 2015 - July 2016: Research/Teaching Assistant at Aalto University, Finland.
- August 2009 - August 2014: Technology Consultant at PwC and Deloitte.

Service Activities
- ACM IMC 2018 Shadow PC member

Achievements
- Received **Best Paper Award** at ACM IMC 2020 for paper titled *Exploring the "Internet from space" with Hypatia.*
- Received **Best Dataset Award** at PAM 2020 for paper titled *Untangling Header Bidding Lore.*
- Received **IETF/IRTF Applied Networking Research Prize, 2020** for research on satellite networks.
- Selected for attending PhD Workshop on Next-Generation Cloud Infrastructure organized by Microsoft Research Cambridge on 25th and 26th of November, 2019

- NordSecMob (Erasmus Mundus Masters Course) Consortium Scholarship (2014 - 2016) by NordSecMob Consortium, February 2014
- Stood 60th out of approximately 70,000 students in Engineering in West Bengal Joint Entrance Examination (WBJEE), 2005
- National Merit Scholarship by Government of India, June 2003 - June 2009

Media Coverage

- Washington Daily Report: *Laser-Linked Satellites Could Deliver 'Internet from Space'* [Dec 2019, link]
- TechXplore: *A new network design for the "internet from space"* by Florian Meyer [Dec 2019, link]
- The morning paper: *A cloud-based content gathering network* by Adrian Colyer [Aug 2017, link]

References

- Prof. Dr. Ankit Dingla
  - Assistant professor, Computer Science, ETH Zürich (PhD supervisor)
  - https://people.inf.ethz.ch/asingla/
- Prof. Dr. Bruce MacDowell Maggs
  - Pelham Wilder Professor of Computer Science, Duke University
  - Director of Engineering, Emerald Innovations
  - Ex-VP of R&D, Akamai Technologies
  - https://users.cs.duke.edu/~bmm/
  - https://en.wikipedia.org/wiki/Bruce_Maggs
- Prof. Dr. Philip Brighten Godfrey
  - Associate Professor, Computer Science, University of Illinois at Urbana-Champaign
  - https://pbg.cs.illinois.edu/
- Prof. Dr. Anja Feldmann
  - Director, Max Planck Institute for Informatics in Saarbruecken
  - https://www.mpi-inf.mpg.de/departments/inet/people/anja-feldmann
  - https://en.wikipedia.org/wiki/Anja_Feldmann
- Prof. Dr. Gregory P. Laughlin
  - Professor, Astronomy, Yale University
  - https://astronomy.yale.edu/people/gregory-laughlin
  - https://en.wikipedia.org/wiki/Gregory_P._Laughlin