

Virag Shah

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Education

- 2010–2015 **PhD**, *The University of Texas at Austin*, Electrical and Computer Engineering.
2007–2009 **M.E.**, *Indian Institute of Science, Bangalore*, Electrical and Comm. Engineering.
2003–2007 **B.E.**, *Mumbai University*, Electronics Engineering.

Employment

- Since 2019 **Uber Inc.**, *San Francisco, CA*.
Data Scientist II.
- 2017–2019 **Stanford University**, *Stanford, CA*.
Postdoctoral Research Scholar. Hosts: Jose Blanchet and Ramesh Johari.
- 2017 **Indian Institute of Technology (IIT) Bombay**, *Mumbai, India*.
Visiting Faculty.
- 2016–2017 **Microsoft Research-INRIA Joint Center**, *Paris, France*.
Postdoctoral Research Scholar. Host: Laurent Massoulié.
- 2015 **The University of Texas at Austin**, *Austin, Tx*.
Simons Postdoctoral Fellow. Host: François Baccelli.
- 2010–2015 **The University of Texas at Austin**, *Austin, Tx*.
MCD Fellow and Graduate Research Assistant. Advisor: Gustavo de Veciana.
- 2013 **Nokia Bell Labs**, *Crawford Hill, NJ*.
Research Intern. Hosts: T.V. Lakshman and Murali Kodialam
- 2009–2010 **Indian Institute of Technology (IIT) Bombay**, *Mumbai, India*.
Research Fellow. Hosts: D. Manjunath and Bikash K. Dey

Research Interests

Operations research, machine learning, bandit learning, revenue management, experimentation design, cloud computing, wireless networks.

Recent works

- Semi-parametric dynamic contextual pricing. V. Shah, J. Blanchet, R. Johari.
 - Accepted at NeurIPS 2019.
 - To be presented at INFORMS, 2019.
- Bandit learning with positive externalities. V. Shah, J. Blanchet, R. Johari.
 - Accepted at NeurIPS (formerly NIPS) 2018.
 - Preliminary version presented at ICML Workshop on Causal ML, 2018, and INFORMS, 2018
- Optimal testing in the experiment-rich regime. S. Schmit, V. Shah, R. Johari.
 - Accepted at AISTATS 2019.
 - Preliminary version presented at ICML Workshop on Causal ML, 2018.
- Adaptive matching algorithms for expert systems with uncertain task types. V. Shah, L. Gulikers, L. Massoulié, M. Vojnovic.
 - Accepted at Operations Research journal.
 - Preliminary version presented at Allerton conference, 2017, and INFORMS 2018.

- Asymptotically optimal thickness of a centralized dynamic matching market with IID utilities. J. Blanchet, M. Reiman, V. Shah, L. Wein. To be submitted.

Awards

- Best Paper Award, IEEE INFOCOM 2014 at Toronto, Canada. 1650 papers submitted, and 313 papers accepted to the conference.
- MCD Fellowship at The University of Texas at Austin, 2010-11. Awarded to about top 1% applicants at the graduate school.
- Best Paper Award, NCC 2010 at IIT Madras, India. 250 papers submitted, and 105 accepted to conference.

Teaching experience

2013 **The University of Texas at Austin.**

Teaching Assistant. Graduate course on Probability and Stochastic Processes.

Programming Languages

- Python, C, Matlab

References

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|----------------------|---|
| ○ Ramesh Johari | Stanford University, rjohari@stanford.edu |
| ○ Jose Blanchet | Stanford University, jose.blanchet@stanford.edu |
| ○ Laurent Massoulié | MSR/INRIA, laurent.massoulie@inria.fr |
| ○ François Baccelli | UT Austin, baccelli@math.utexas.edu |
| ○ Gustavo de Veciana | UT Austin, gustavo@ece.utexas.edu |

Journal Publications

- V. Shah, L. Gulikers, L. Massoulie, M. Vojnovic, *Adaptive matching algorithms for expert systems with uncertain task types*. Accepted at Operations Research journal, 2019.
- T. Bonald, C. Comte, V. Shah, G. de Veciana, "Poly-symmetry in processor-sharing systems," *Queuing Systems (QUESTA)*, 2017.
- V. Shah, G. de Veciana, and G. Kesidis "A stable approach for routing queries in unstructured P2P networks," *IEEE/ACM Trans. on Networking (ToN)*, Oct. 2016.
- V. Shah and G. de Veciana, "Impact of fairness and heterogeneity on delays in large-scale content delivery systems," *Queuing Systems (QUESTA)*, Aug. 2016.
- V. Shah and G. de Veciana, "Asymptotic independence of servers' utilization in queuing systems with limited resource pooling," *Queuing Systems (QUESTA)*, Jun. 2016.
- V. Shah and G. de Veciana, "High performance centralized content delivery infrastructure: models and asymptotics," *IEEE/ACM Trans. on Networking (ToN)*, Oct. 2015.
- V. Shah, B. K. Dey, and D. Manjunath, "Network flows for functions," *IEEE J. on Selected Areas in Comm. (JSAC)* Special Issue on In-Network Computation, Mar. 2013.

- V. Shah, N. B. Mehta, and D. Bethanabhotla, "Performance of a Fast, Distributed Multiple Access Based Relay Selection Algorithm Under Imperfect Statistical Knowledge", *IEEE Trans. on Wireless Comm.* (TWC), Oct. 2011.
- V. Shah, N. B. Mehta, and R. Yim, "The relay selection and transmission tradeoff in cooperative communication systems," *IEEE Trans. on Wireless Comm.* (TWC), Aug. 2010.
- V. Shah, N. B. Mehta, and R. Yim, "Optimal timer based selection schemes," *IEEE Trans. on Comm.* (TCOM), Jun. 2010.
- V. Shah, N. B. Mehta, and R. Yim, "Splitting algorithms for fast relay selection: Generalizations, analysis, and a unified view," *IEEE Trans. on Wireless Comm.* (TWC), Apr. 2010.

Peer-reviewed conference Publications

- V. Shah, J. Blanchet, R. Johari, "Semi-parametric dynamic contextual pricing," in NeurIPS (Neural Information Processing Systems) Conference 2019.
- S. Schmit, V. Shah, R. Johari, "Optimal testing in the experiment-rich regime," AISTATS Conference 2019.
- V. Shah, J. Blanchet, R. Johari, "Bandit learning with positive externalities," in NeurIPS (Neural Information Processing Systems) Conference 2018.
- V. Shah, L. Gulikers, L. Massoulie, M. Vojnovic, "Adaptive matching algorithms for expert systems with uncertain task types," in Allerton Conference 2017.
- V. Shah, A. Bouillard, F. Baccelli, "Delay comparison of delivery and coding policies in data Clusters," in Allerton Conference 2017.
- V. Shah and G. de Veciana "Impact of fairness and heterogeneity on delays in large-scale content delivery systems," in ACM SIGMETRICS 2015.
- V. Shah and G. de Veciana "Performance evaluation and asymptotics for content delivery networks," in IEEE INFOCOM 2014.
- V. Shah, G. de Veciana, and G. Kesidis, "Learning to route queries in unstructured P2P networks: Achieving throughput optimality subject to query resolution constraints," in IEEE INFOCOM 2012.
- V. Shah, B. K. Dey, and D. Manjunath, "Efficient flow allocation algorithms for in-network function computation," in IEEE GLOBECOM 2011.
- V. Shah, B. K. Dey, and D. Manjunath, "Network flows for functions," in IEEE International Symposium of Information Theory (ISIT) 2011.
- V. Shah, N. B. Mehta, and R. Yim, "A complete characterization of an optimal timer based selection scheme," in IEEE International Conference on Communications (ICC) 2010.
- A. S. Teertha, N. B. Mehta, V. Shah, "On optimal timer-based distributed selection for rate-adaptive

multi-user diversity systems," National Conference on Communications (NCC) 2010.

- V. Shah, N. B. Mehta, and R. Yim, "Relay selection and data transmission throughput tradeoff in cooperative systems," in IEEE GLOBECOM 2009.
- V. Shah, N. B. Mehta, and R. Yim, "Analysis, insights and generalization of a fast decentralized relay selection mechanism," in IEEE International Conference on Communications (ICC) 2009.