Virag Shah

Stanford University
Management Science and Engineering
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https://virags.github.io

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 2017 **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

I develop models and algorithms for online platforms which address the tradeoffs between exploration to reduce uncertainty, and exploitation for instantaneous and future benefits. Multi-armed bandits, revenue management, queueing theory, and learning.

Recent works

- Bandit learning with positive externalities. V. Shah, J. Blanchet, R. Johari.
  - Accepted at NIPS 2018.
  - Preliminary version presented at ICML Workshop on Causal ML, 2018.
  - To be presented at INFORMS 2018.
- Adaptive matching algorithms for expert systems with uncertain task types. V. Shah, L. Gulikers, L. Massoulie, M. Vojnovic.
  - Under review at Operations Research journal. Major Revision.
  - Preliminary version presented at Allerton conference, 2017.
  - To be presented at INFORMS 2018.
- Optimal testing in the experiment-rich regime. S. Schmit, V. Shah, R. Johari. Submitted. Preliminary version presented at ICML Workshop on Causal ML, 2018.
- Semi-parametric dynamic pricing with binary observations. V. Shah, R. Johari, J. Blanchet. In preparation.

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

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

Publications

Online platform revenue/resource management

- V. Shah, R. Johari, J. Blanchet, *Semi-parametric dynamic pricing with binary observations.* In preparation.
- V. Shah, J. Blanchet, R. Johari, *Bandit learning with positive externalities.* Accepted at NIPS (Neural Information Processing Systems) conference, 2018. Journal version in preparation.
- S. Schmit, V. Shah, R. Johari, *Optimal testing in the experiment-rich regime.* Submitted to a conference. Journal version in preparation.
- V. Shah, L. Gulikers, L. Massoulie, M. Vojnovic, *Adaptive matching algorithms for expert systems with uncertain task types.* Major Revision at Operations Research journal. Also presented at Allerton conference, 2017.

Network performance evaluation

- T. Bonald, C. Comte, V. Shah, G. de Veciana, *Poly-symmetry in processor-sharing systems.* Queuing Systems 2017.
- V. Shah and G. de Veciana, *Impact of fairness and heterogeneity on delays in large-scale content delivery systems,* Queuing Systems 2016. Also presented at SIGMETRICS 2015.

- V. Shah, G. de Veciana, and G. Kesidis, *A stable approach for routing queries in unstructured P2P networks.* IEEE/ACM Trans. on Networking 2016. Also presented at INFOCOM 2012.

- V. Shah and G. de Veciana, *Asymptotic independence of servers' utilization in queuing systems with limited resource pooling. Queuing Systems* 2016.

- V. Shah and G. de Veciana, *High performance centralized content delivery infrastructure: models and asymptotics.* IEEE/ACM Trans. on Networking 2015. Also presented at INFOCOM 2014 **Best Paper Award**.

- V. Shah, B. K. Dey, and D. Manjunath, "Network flows for functions," IEEE JSAC Special Issue on In-Network Computation, Mar. 2013. Also presented in parts at IEEE Globecom 2011 and IEEE International Symposium of Information Theory (ISIT) 2011.

Wireless medium access control

- 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. 2011.

- V. Shah, N. B. Mehta, and R. Yim, *The relay selection and transmission tradeoff in cooperative communication systems.* IEEE Trans. on Wireless Comm. 2010. Also presented at IEEE GLOBECOM 2009.

- V. Shah, N. B. Mehta, and R. Yim, *Optimal timer based selection schemes.* IEEE Trans. on Comm. 2010. Also presented at IEEE International Conference on Comm. 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. Also presented at IEEE International Conference on Comm. 2009.

- A. S. Teertha, N. B. Mehta, V. Shah, "On optimal timer-based distributed selection for rate-adaptive multi-user diversity systems," National Conference on Comm. 2010 **Best Paper Award.**