

# Shalmali Joshi

## Curriculum Vitae

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### Current Position:

Postdoctoral Fellow, Vector Institute

### Past Affiliations:

IDEA Lab, WNCG at UT Austin

### Education

'13- '18	Ph.D., Electrical & Computer Engg	UT Austin (Advisor: Joydeep Ghosh)
'09-'11	M.S., Electrical & Computer Engg	UC, San Diego
'05-'09	B. Tech., Electrical Engg	Vishveshvaraya Natl. Inst. of Tech., India

### Research Interests

Developing reliable, fair, and explainable Machine Learning for Healthcare

### Work Experience

Nov '18-	Postdoctoral Fellow (PI: Anna Goldenberg)	<b>Vector Institute</b> , Toronto, CA
Sept '13-Dec '18	Graduate Research Assistant	<b>UT Austin</b> , Austin, US
Jun '11-Jun '13	Software Engineer	<b>Amazon Lab 126</b> , Sunnyvale, US

### Scientific products

#### *Manuscripts - In Submission*

1. Melissa McCradden, **Shalmali Joshi**, James Anderson, and Mjaye Mazwi. When your only tool is a hammer: ethical limitations of computational fairness solutions in healthcare machine learning. 2019
2. Sana Tonekaboni\*, **Shalmali Joshi\***, David Duvenaud, and Anna Goldenberg. Explaining time series by counterfactuals. 2019
3. Seungeun Yi\*, Shirly Wang\*, **Shalmali Joshi**, and Marzyeh Ghassemi. Fair and robust treatment effect estimates: Estimation under treatment and outcome disparity with deep neural models. 2019
4. **Shalmali Joshi**, Oluwasanmi Koyejo, Been Kim, Warut Vijitbenjaronk, and Joydeep Ghosh. Realistic individual recourse and actionable explanations in black-box decision making systems. 2019

#### *Publications - Conference and Journal*

5. Irene Chen, **Shalmali Joshi**, and Marzyeh Ghassemi. Treating health disparities with AI. In *Nature Medicine (to appear)*, 2019

6. **Shalmali Joshi\***, Sana Tonekaboni\*, Melissa McCradden, and Anna Goldenberg. What clinicians want: Contextualizing explainable machine learning for clinical end use. In *Machine Learning for Healthcare (MLHC)*, 2019
7. **Shalmali Joshi**, Rajiv Khanna, and Joydeep Ghosh. Co-regularized monotone regtargeting for semi-supervised LeTOR. In *Siam International Conference on Data Mining (SDM)*, 2018
8. **Shalmali Joshi**, Suriya Gunasekar, David Sontag, and Joydeep Ghosh. Identifiable phenotyping using constrained Non-Negative matrix factorization. In *Machine Learning for Healthcare Conference (MLHC)*, 2016
9. **Shalmali Joshi**, Joydeep Ghosh, Mark Reid, and Oluwasanmi Koyejo. Rényi divergence minimization based co-regularized multiview clustering. *ECML-PKDD Journal Track - Machine Learning*, 2016
10. **Shalmali Joshi**, Oluwasanmi Koyejo, Kristine Resurreccion, and Joydeep Ghosh. Simultaneous prognosis and exploratory analysis of multiple chronic conditions using clinical notes. In *International Conference on Healthcare Informatics (ICHI)*, 2015

#### *Peer Reviewed Workshop/Abstracts*

11. Sana Tonekaboni, **Shalmali Joshi**, and Anna Goldenberg. Individualized feature importance for time series risk prediction models. In *Machine Learning for Health Workshop at NeurIPS*, 2019
12. Melissa McCradden, James Anderson, and **Shalmali Joshi**. When your only tool is a hammer: The limits of computational solutions to bias in healthcare ml. In *Fair ML for Health Workshop at NeurIPS*, 2019
13. Seungeun Yi, Shirly Wang, **Shalmali Joshi**, and Marzyeh Ghassemi. Fair and robust treatment effect estimates: Estimation under treatment and outcome disparity with deep neural models. In *Fair ML for Health Workshop at NeurIPS*, 2019
14. Melissa McCradden, Sana Tonekaboni, **Shalmali Joshi**, and Anna Goldenberg. Five pillars of explainable clinical machine learning. In *Frontier of AI-Assisted Care (FAC), Scientific Symposium*, 2019
15. **Shalmali Joshi**, Oluwasanmi Koyejo, Been Kim, Warut Vijitbenjaronk, and Joydeep Ghosh. Towards realistic individual recourse and actionable explanations in black-box decision making systems. In *SafeML Workshop at the International Conference on Learning Representations (ICLR)*, 2019
16. **Shalmali Joshi**, Been Kim, Oluwasanmi Koyejo, and Joydeep Ghosh. Through the looking GANs. In *Women in Machine Learning Workshop @ NeurIPS*, 2017
17. **Shalmali Joshi**, Oluwasanmi Koyejo, and Joydeep Ghosh. Simultaneous prognosis of multiple chronic conditions from heterogeneous EHR data. In *International Conference on Healthcare Informatics (ICHI)*, 2015
18. **Shalmali Joshi**, Oluwasanmi Koyejo, and Joydeep Ghosh. Multiview clustering via constrained bayesian inference. In *Workshop on Divergence Methods for Probabilistic Inference at ICML*, 2014

## Theses

19. **Shalmali Joshi.** *Constraint based Approaches to Interpretable and Semi-Supervised Machine Learning.* PhD thesis, The University of Texas at Austin, December 2018

\*Equal Contribution.

## Invited Talks

November, '19: Guest Lecture, AI and Ethics Graduate Class UofT CS

November, '19: The 99 AI Challenge cohort with University of Toronto Libraries

November, '19: CSI Departmental Seminar, Emory University, Atlanta, Georgia

October, '19: Data & Society Meeting at NYU on Evaluating Fairness for ML in Health

August, '19: Launch event of the Schwartz Reisman Institute for Technology and Society (SRIT&S) on fairness and explainability in health

## Teaching experience (Teaching Assistant)

Fall '15	Advanced Predictive Modeling	McCombs School of Business, UT Austin
Fall '14	Graduate Data Mining	Electrical & Computer Engg., UT Austin
Spring '14	Graduate Data Mining	Electrical & Computer Engg., UT Austin

## Internship Experience

Summer '15	Technical Intern	<b>Yahoo! Labs</b> , Sunnyvale, CA, US
Summer '10	HPC Algorithms Intern	<b>Life Technologies</b> , Carlsbad, CA, US
Summer '07	Undergraduate Researcher	<b>IIT Madras</b> , India

## Service

Comms Chair	1 <sup>st</sup> ACM Conference on Health, Inference, and Learning (CHIL)	2020
Co-chair	NeurIPS Workshop, Fairness in Machine Learning for Health	2019
Reviewer	AAAI, ICLR, AISTATS, NeurIPS, ICML, Nature Medicine	2019
PC Member	ICLR Workshop, DebugML	2019
PC Member	NeurIPS Workshop, Machine Learning for Health	2018
Reviewer	MLHC, WiML@NeurIPS (Women In Machine Learning), ML4H	2017
Reviewer	Workshop at NeurIPS	
Reviewer	NeurIPS, ICML, TKDD	2015

## Awards

2017	WiML@NIPS Travel Award
2015	IEEE ICHI Travel Award
2003	National Talent Search Scholarship, Govt. of India

## Technical Skills

Programming/Scripting

Expert: Python, MATLAB, Bash

Competent: C++, C, R, XML, Perl

Libraries, Tools, IDEs

Expert: PyTorch, Tensorflow, scikit\_learn, numpy, scipy, vim

Competent: STL, Cvx, openCV, Qt Creator, RStudio, PyCharm,

CUDA API, gcc, gdb, LibSVM

Versioning Tools

Expert: Git, svn

Operating Systems

OSx, Linux

## References

Available Upon Request