Manan Shah

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Education

Stanford University *Stanford, CA*

B.S. in Computer Science (Theory), M.S. in Computer Science (Artificial Intelligence), Minor in Mathematics *2017 - 2021 (Expected)*

- GPA: 3.8 of 4.0, SAT: 2320 of 2400
- *Relevant Coursework:* Modern Mathematics, Continuous and Discrete Methods (MATH 61CM, 62DM, 63DM, 108), Advanced Physics (PHYSICS 61, 63, 65), Statistical Inference (EE 263, STATS 200), Algorithms, Systems, and Automata Theory (CS 106X, 107, 110, 154, 161, 261), Data Mining and Machine Learning (CS 229, 224W, 224N, 228, 236, 246, 255), Convex Optimization (EE 364A)
- *Clubs and Societies:* ACM (Officer), IEEE (Academic Liaison), Stanford Undergraduate Research Journal (Senior Editor), Stanford Business Association of Entrepreneurial Students (Technical Team VP), Alpha Kappa Psi Pi Tau Chapter (Member)

Experience

Google Brain *Mountain View, CA*

Student Researcher *Jun 2019 - Sep 2019*

- Conducted computer vision research involving the identification of biological anomalies in Chest X-Ray data. Advised by Shahar Jamshy.

Google Research and Machine Intelligence *Mountain View, CA*

Student Researcher, Software Engineering Intern *Jun 2018 - Sep 2019*

- 2019: Student researcher (summer) conducting confidential machine intelligence research involving sequence representation learning. Tools utilized include MapReduce, Tensorflow, Bazel, Python 2.7, and C++11. Advised by Max Vladymyrov.
- 2018: Software engineering intern (summer) and student researcher (fall, winter, spring) with the Expander team in Google Strategic Technologies working on multimodal computer vision frameworks and graph-based machine learning systems. Advised by Ariel Fuxman.

Stanford InfoLab *Stanford, CA*

Student Researcher *Jun 2015 - present*

- Conducting research involving embedding graphs in hyperbolic space, advised by Jure Leskovec.
- Created and published a natural language processing based system to predict CDC influenza rates from raw Twitter data.
- Developed and open-sourced algorithms to embed graphs in latent feature spaces for numerous downstream prediction tasks.

Stanford Machine Learning Group *Stanford, CA*

Student Researcher *Sep 2017 - Dec 2017*

- Developed multivariate prediction frameworks to identify heterogeneous treatment effects in clinical data.
- Worked in a joint collaboration with the Stanford Medical School to evaluate real-world outcomes of proposed treatments.

Harvard Medical School, Beth Israel Deaconess Medical Center *Boston, MA*

Student Researcher *Jun 2016 - Jun 2017*

- Developed a computer vision framework for characterizing the severity of tumor proliferation from large digital histology images, ranking as best academic team in the 2016 Tumor Proliferation Assessment Challenge.
- Worked with Mauricio Santillana at the Boston Children's Hospital to develop a regional influenza prediction system using Twitter data.

Stanford Laboratory of Imaging Informatics *Stanford, CA*

Student Researcher *Jun 2015 - Aug 2015*

- Developed machine learning models to grade diabetic retinopathy severity from retinal fundus images.
- Placed in the top 100 teams in the associated diabetic retinopathy Kaggle competition.

Honors and Awards

- 2017 National Siemens Competition 2nd Place ($50K scholarship)
- 2017 Regeneron Talent Search Finalist ($25K scholarship)
- 2017 Davidson Fellow ($25K scholarship)
- 2016, 2017 Intel International Science and Engineering Fair Medalist
- 2017 Presidential Scholar Semifinalist
- USA Computing Olympiad Gold Level
- USA Physics and Biology Olympiad Semifinalist
- USA Mathematics Olympiad AIME Qualifier
- USA Invitational Youth Physicists Tournament Champion (2014, 2015)
- Presidential Gold Award for Community Service (150+ hours)

Publications

- **Shah, M.**, Viswanathan, K., Lu, C.T., Fuxman, A., Li, Z., Timofeev, A., Jia, C. and Sun, C., 2019, November. *Inferring Context from Pixels for Multimodal Image Classification.* 28th ACM International Conference on Information and Knowledge Management (pp. 189-198).
- Veta, M., Heng, Y.J., Stathonikos, N., Bejnordi, B.E., Beca, F., Wollmann, T., Rohr, K., **Shah, M.**, Wang, D., Rousson, M. and Hedlund, M., 2019. *Predicting breast tumor proliferation from whole-slide images: the TUPAC16 challenge.* Medical image analysis, 54, 111-121.
- Lu, F.S., Hou, S., Baltrusaitis, K., **Shah, M.**, Leskovec, J., Sosic, R., Hawkins, J., Brownstein, J., and Gray, J., 2018. *Accurate influenza monitoring and forecasting using novel Internet data streams: a case study in the Boston Metropolis.* JMIR public health and surveillance, 4(1).
- **Shah, M.**, Wang, D., Rubadue, C., Suster, D. and Beck, A., 2017. *Deep learning assessment of tumor proliferation in breast cancer histological images.* In Bioinformatics and Biomedicine (BIBM), 2017 IEEE International Conference on (pp. 600-603). IEEE. Presented at MICCAI 2017.
- **Shah, M.**, 2016, December. *Disease propagation in social networks: a novel study of infection genesis and spread on Twitter.* In Workshop on Big Data, Streams and Heterogeneous Source Mining (pp. 85-102). Presented at KDD 2016.

Technical Skills

- Programming Languages and Tools: C, C++, Python, Java, Mathematica, Shell
- Web Languages and Tools: SQL, HTML5, JavaScript, Express + Node.JS
- Engineering Tools: Matlab, R, Tensorflow (with C++ and Python)