Nalini Singh — Curriculum Vitae

Computer Science and Artificial Intelligence Lab
Department of Health Sciences and Technology
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Education

Ph.D., Medical Engineering and Medical Physics — 2017 - Present

Harvard-MIT Division of Health Sciences and Technology; Advisor: Polina Golland

S.B., Electrical Engineering and Computer Science — 2013 - 2017

Massachusetts Institute of Technology

Experience

MIT Computer Science & Artificial Intelligence Laboratory, Cambridge, MA — Sep 2017 - Present

Graduate Research Assistant, Medical Vision Group
Developing machine learning methods for correcting corrupted Fourier-space data, enabling faster and more accurate visualization and identification of pathologies in medical images.

Google, Inc., Mountain View, CA — Jun 2018 - Dec 2019

Software Engineering Intern/Student Researcher, Google Brain/Google Health
Quantified agreement between neural network prediction explanations and human-labeled interest regions for skin condition classification, identifying potential classifier failure modes.

Google, Inc., Sunnyvale, CA — Jun 2017 - Aug 2017

Software Engineering Intern, Google Station
Implemented software feature to increase use of public wi-fi at international rail stops; project launched externally at 15 Google Stations in November 2017.

IBM Research, Cambridge, MA — Jan 2017

Research Intern, Healthcare Analytics Group
Designed and conducted feature analyses to predict proteins involved in adverse drug reactions (ADRs), suggesting future experimental studies to understand ADR mechanisms.

Nihon Kohden Innovation Center, Cambridge, MA — Jun 2016 - Jun 2017

Research Intern
Developed classifiers predicting bedside alarm relevance as a step toward reduced alarm fatigue in neonatal intensive care units.

Charles Stark Draper Laboratory, Cambridge, MA — Jun 2015 - Aug 2015

Signal Processing, Algorithms, and Software Intern
Developed and implemented computer vision methods for GPS-free parafoil localization, enabling supply delivery to remote regions.

MIT Media Lab, Cambridge, MA — Apr 2014 - Jun 2017

Undergraduate Researcher, Biomechatronics Group
Developed biomimetic prosthesis control systems to enable amputee walking across varied terrains.

Publications

Preprints

Singh, N., Iglesias, J., Adalsteinsson, E., Dalca, A., Golland, P. "Joint Frequency- and Image-Space Learning for Fourier Imaging". *arXiv:2007.01441* (2020).

Peer-Reviewed Workshop Publications

Singh, N., Lee, K., Coz, D., Angermueller, C., Huang, S., and Liu, Y. "Agreement Between Saliency Maps and Human-Labeled Regions of Interest: Applications to Skin Disease Classification". *CVPR ISIC Workshop on Skin Image Analysis* (2020).

Conference Publications

Dever, C., Dyer, T., Hamilton, L., Lommel, P., Mohiuddin, S., Reiter, A., **Singh, N.**, Truax, R., Wholey, L., Bergeron, K. and Noetscher, G. "Guided-Airdrop Vision-Based Navigation". *24th AIAA Aerodynamic Decelerator Systems Technology Conference* (2017).

Journal Publications

Liu, Y., Jain, A., Eng, C., Way, D. H., Lee, K., Bui, P., Kanada, K., de Oliveira Marinho, G., Gallegos, J., Gabriele, S., Gupta, V., **Singh, N.**, et al. "A Deep Learning System for Differential Diagnosis of Skin Diseases". *Nature Medicine* (2020).

Clites, T., Arnold-Rife, A., **Singh, N.**, Kline, E., Chen, H., Tugman, C., Billadeau, B., Biewener, A., and Herr, H. "Goats Decrease Leg Stiffness When Walking Over Compliant Surfaces". *Journal of Experimental Biology* (2019).

Luo, H., Fokoue-Nkoutche, A., **Singh, N.**, Yang, L., Hu, J., and Zhang, P. "Molecular Docking for Prediction and Interpretation of Adverse Drug Reactions". *Combinatorial Chemistry & High Throughput Screening* (2018), 21(5), 314-322.

Peer-Reviewed Abstracts

Lala, S. **Singh, N.**, Gagoski, B., Abaci-Turk, E., Grant, P.E., Golland, P., and Adalsteinsson, E. "A Deep Learning Approach for Image Quality Assessment of Fetal Brain MRI". *International Society for Magnetic Resonance in Medicine Annual Meeting* (2019). **Oral Presentation.**

Teaching

6.011: Signals, Systems, and Inference, Cambridge, MA   Feb 2017 - May 2017
  Teaching Assistant
  Taught three weekly tutorial sections; assisted students in office hours and electronically. Rating: 6.8/7.0.

Service

Reviewer, ICML (2020)
Reviewer, ICML Workshop: Healthcare Systems, Population Health, and the Role of Health-Tech (2020)
Reviewer, MICCAI Workshop: Uncertainty for Safe Utilization of Machine Learning in Medical Imaging (2020)

Awards

MICCAI Student Participation Award	2020
National Science Foundation Graduate Fellowship	2018
National Institutes of Health Neuroimaging Training Program Fellowship	2017, 2018
Eta Kappa Nu	2016
Tau Beta Pi	2016
Intel Science Talent Search Semifinalist	2013