

Computer Science and Artificial Intelligence Lab
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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
Research Assistant, Medical Vision Group
Developing neural networks for reconstruction of severely motion-corrupted MRI images.

Google, Inc., Mountain View, CA Jun 2018 - Dec 2019
Software Engineering Intern/Student Researcher, Google Brain
Quantified agreement between neural network prediction explanations and human-labeled interest regions for skin condition classification. Paper submitted to ACM Conference on Health, Informatics, and Learning.

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 determine proteins involved in adverse drug reactions.

Nihon Kohden Innovation Center, Cambridge, MA Jun 2016 - Jun 2017
Research Intern
Developed classifiers for evaluating relevance of bedside alarms 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 “lost robot” parafoil localization without GPS.

MIT Media Lab, Cambridge, MA Apr 2014 - Jun 2017
Undergraduate Researcher, Biomechatronics Group
Developed biomimetic prosthesis control systems for walking across varied terrains.

Publications

Conference Publications

Singh, N., Lee, K., Coz, D., Angermueller, C., Huang, S., and Liu, Y. “Agreement Between Saliency Maps and Human-Labeled Regions of Interest: A Dermatology Case Study”. *Under Review*.

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

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

Singh, N., Liao, R., Dalca, A., Adalsteinsson, E., and Golland, P. "A Deep Learning Approach for Inferring Motion Parameters from Rigid-Body Motion-Corrupted K-Space Data". *Under Review*.

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.**

Preprints

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". *arXiv:1909.05382* (2019).

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.

Awards

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