

# Meenakshi Khosla

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<b>Contact Information</b>	School of Electrical and Computer Engineering 391 Rhodes Hall Cornell University Ithaca, NY 14850	E-mail: mk2299@cornell.edu meenakshik1993@gmail.com Mobile: +1-917-754-5410 <a href="https://www.meenakshikhosla.com">https://www.meenakshikhosla.com</a>
<b>Research Interests</b>	Neuroimaging, Machine learning, Computer vision, Computational Neuroscience, functional MRI, Biomedical image analysis	
<b>Education</b>	<b>Cornell University, Ithaca, NY</b> [2017 - Present] PhD candidate in Electrical and Computer Engineering, Minor in Applied Statistics Advisor: Mert Sabuncu Thesis Committee: Amy Kuceyeski, Peter Doerschuk Dissertation topic: “Machine learning in resting-state and naturalistic fMRI analysis” Grade Point Average: 4.0	
	<b>Indian Institute of Technology, Kanpur, India</b> [2011-2016] M.Tech. Electrical Engineering, Cumulative performance index: 10/10 B.Tech. Electrical Engineering, Cumulative performance index: 9.5/10	
<b>Selected Publications</b>	Meenakshi Khosla, Gia H. Ngo, Keith Jamison, Amy Kuceyeski & Mert R. Sabuncu. “ <b>Neural encoding with visual attention.</b> ” <i>Advances in Neural Information Processing Systems</i> , 2020 (To appear).	
	Meenakshi Khosla, Gia H. Ngo, Keith Jamison, Amy Kuceyeski & Mert R. Sabuncu. “ <b>A shared neural encoding model for the prediction of subject-specific fMRI response.</b> ” <i>MICCAI</i> , 2020. [ <a href="#">pdf</a> ]	
	Gia H. Ngo, Meenakshi Khosla, Keith Jamison, Amy Kuceyeski & Mert R. Sabuncu. “ <b>From Connectomic to Task-evoked Fingerprints: Individualized Prediction of Task Contrasts from Resting-state Functional Connectivity.</b> ” <i>MICCAI</i> , 2020.	
	Meenakshi Khosla, Gia H. Ngo, Keith Jamison, Amy Kuceyeski & Mert R. Sabuncu. “ <b>Cortical response to naturalistic stimuli is largely predictable with deep neural networks.</b> ” bioRxiv 2020.09.11.293878. [ <a href="#">pdf</a> ]	
	Meenakshi Khosla, Keith Jamison, Amy Kuceyeski and Mert R. Sabuncu. “ <b>Ensemble learning with 3D convolutional neural networks for connectome-based prediction.</b> ” <i>NeuroImage</i> , 2019. [ <a href="#">pdf</a> ]	
	Meenakshi Khosla, Keith Jamison, Amy Kuceyeski and Mert R. Sabuncu. “ <b>3D convolutional neural networks for classification of functional connectomes.</b> ” <i>Deep Learning in Medical Image Analysis workshop at MICCAI</i> , 2018. [ <a href="#">pdf</a> ]	
	Meenakshi Khosla, Keith Jamison, Gia H. Ngo, Amy Kuceyeski and Mert R. Sabuncu. “ <b>Machine learning in resting-state fMRI analysis.</b> ” <i>Magnetic resonance imaging</i> , 2019 (Special issue on Machine Learning). [ <a href="#">pdf</a> ]	
	Meenakshi Khosla, Keith Jamison, Amy Kuceyeski and Mert R. Sabuncu. “ <b>Detecting abnormalities in resting-state dynamics: An unsupervised learning approach.</b> ” <i>Machine learning in medical imaging workshop at MICCAI</i> , 2019. [ <a href="#">pdf</a> ]	
	Meenakshi Khosla, Sravya Rao and Shilpi Gupta. “ <b>Polarons Explain Luminescence Behavior of Colloidal Quantum Dots at Low Temperature.</b> ” <i>Sci Rep</i> , 2018. [ <a href="#">pdf</a> ]	
<b>Professional Experience &amp; Internships</b>	<b>Qualcomm Research</b> , Autonomous Driving, San Diego, CA [Jun-Aug 2018] <i>Summer internship project with Qualcomm’s ADAS team.</i> “Developing & optimizing energy-efficient neural networks for object detection & lane segmentation”	

**Yale School of Medicine**, Clinical Neurosciences Imaging Center, New Haven, CT [2016-17]  
*Postgraduate research associate, mentored by Professor Hal Blumenfeld.*

“Signal processing for analyzing intracranial EEG data to study human normal consciousness”

**Cornell University**, Computer Systems Lab, Ithaca, NY [Jun-Aug 2014]  
*Summer internship project, mentored by Professor Rajit Manohar.*

“Pareto-optimality for ultra low-voltage design of WCHB QDI asynchronous circuits”

**Fellowships & Awards**

- Cornell ECE Outstanding PhD TA Award [2020]
- MICCAI Student Travel Award [2020]
- Christen Fellowship, Cornell University [2017]
- Gargi Maitreyi Lilavati Award, awarded to female students with highest CGPA, IIT Kanpur [2015]
- Academic Excellence Award for distinctive achievements, IIT Kanpur [2012, 2013, 2015]
- Todai-IIT Undergraduate Student Scholarship for Academic Excellence, University of Tokyo [2014]
- KVPY Scholarship, Department of Science & Technology, Government of India [2011]

**Graduate Coursework**

- Machine Learning Theory (CS 6783) [Fall 2019]
- Statistical Distances for Machine Learning (ECE 6970) [Fall 2019]
- Computer Vision (CS 6670) [Fall 2018]
- Bayesian Statistics and Data Analysis (ORIE 6780) [Fall 2018]
- Introduction to Neural Engineering (ECE 5040) [Spring 2018]
- Machine learning for Data Science (CS 5786) [Fall 2017]
- Machine learning with Biomedical Data (ECE 5970) [Fall 2017]
- Statistical Principles (ORIE 6700) [Fall 2017]

**Teaching & Professional Activities**

- Teaching Assistant**, ECE4250 Digital Signal and Image processing at Cornell University [2019,2020]
- Reviewer**, Medical Image Computing and Computer Assisted Intervention (MICCAI) [2020]
- Reviewer**, NeuroImage [2018-2020]
- Teaching Assistant**, Microelectronics at IIT Kanpur [2016]

**Relevant Course Projects**

- A graph-based approach to estimate mutual information** [Fall 2019]  
Presented a novel approach to estimate mutual information between input data and internal representations of a neural network that relies solely on the neighborhood graph of these representations. Employed density-based clustering to quantify clusterability of the induced graph structure and demonstrated that this notion closely follows the trajectory of mutual information during training.

- Machine learning methods for seizure detection** [Spring 2018]  
Explored several features and algorithms for seizure detection from intracranial EEG recordings. Secured 2nd position in the ECE 5040 Kaggle challenge of this project.

- Prediction of longitudinal evolution of Alzheimer’s Disease** [Fall 2017]  
Implemented several algorithms to predict future disease states and clinical scores of patients from multi-modal imaging data, including functional principal component analysis, linear and non-linear mixed effect models and random forests.

- Bayesian nonparametric extensions of Hidden Markov Models** [Fall 2018]  
Reviewed bayesian nonparametric models for time-series data and discussed the evolution of their inference algorithms.

**Social & Leadership Initiatives**

- Led** a breakout session on “Machine Learning for Neuroimaging” at WiML, ICML [2020]
- Volunteered** as a content reviewer for the Neuromatch academy [2020]
- Served** as **Mentorship Manager, Avanti Core Team**, IIT Kanpur [2013-14]
- Mentored** high-school STEM students as part of the **Avanti Team**, IIT Kanpur [2012-14]
- Served** as **Student Guide, Counselling Service**, IIT Kanpur [2012-13]

**Programming Skills**

Language: Python, C++, MATLAB, L<sup>A</sup>T<sub>E</sub>X  
Frameworks: Tensorflow, Keras, Pytorch, Nilearn, Numpy, Scipy, Pandas