

SUSHRUT THORAT

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INTERESTS	The role of Attention and Awareness in the Brain, the nature of object-scene interactions in the visual system, problem of Identity	
EDUCATION	PhD in Cognitive Neuroscience	<i>Ongoing</i>
	Donders Centre for Cognition, Radboud University, The Netherlands	
	Masters (Hons.) in Cognitive Neuroscience	<i>July 2017</i>
	Center for Mind/Brain Sciences (CIMEC), University of Trento, Italy	
	B.Tech. in Engineering Physics	<i>August 2015</i>
	Department of Physics, Indian Institute of Technology - Bombay (IIT-B), India	
PRIMARY PROJECTS	Master's Thesis: Using Convolutional Neural Networks to measure the contribution of visual features to the representation of object animacy in the brain	
	<i>Advisor: Marius Peelen</i>	<i>Spring 2017</i>
	Representations in the CNN layers correlate highly with the visual ventral stream representations, even in the case of stimuli confounding visual features as in Proklova, et.al., 2016. Visual features are rich contributors to semantic representations. This project specifically aims to assess the level of visual contribution to the representation of 'animacy' in ventral temporal cortex, using a CNN as a model for feed-forward visual information processing.	
	B.Tech. Thesis: Quadcopter Flight Control using Modular Spiking Neural Networks	
	<i>Advisor: Bipin Rajendran</i>	<i>Spring 2015</i>
	We developed a model-based control scheme for velocity-waypoint navigation in the presence of wind, noisy and delayed IMU data, for a quadcopter. We built small spiking neural networks with simple spike-triggered adaptive synapses for implementing arithmetic operations. We outlined a method of developing a spiking neural network for quadcopter Control to analyse the gain in computational power and stability provided by spike-based networks.	
PUBLICATIONS	Thorat, S. and Choudhari, V. (2016) Implementing a Reverse Dictionary, based on word definitions, using a Node-Graph Architecture, <i>Proceedings of COLING 2016, the 26th International Conference on Computational Linguistics: Technical Papers</i> , Osaka, 2016, pp. 2797 – 2806.	
	Thorat, S. and Rajendran, B. (2015) Arithmetic computing via rate coding in neural circuits with spike-triggered adaptive synapses, <i>2015 International Joint Conference on Neural Networks (IJCNN)</i> , Killarney, 2015, pp. 1 – 8. doi: 10.1109/IJCNN.2015.7280822	
WORK EXPERIENCE	General Secretary	<i>2014-15</i>
	Undergraduate division - Department of Physics, IIT Bombay	
	Content Developer	<i>Summer 2013</i>
	Avanti Fellows, Delhi	
TECHNICAL SKILLS	Programming: Python (TensorFlow), MATLAB (PsychToolbox, MatConvNet, SPM)	
	Web-Design: HTML5, CSS3, JavaScript	
	Neuro-Imaging: EEG, fMRI	

ACADEMIC
ACHIEVEMENTS

- **Abstract Award Winner** at the Rovereto Workshop on Concepts, Actions and Objects (2017).
- Ranked **721 among 450,000 students** in the Joint Entrance Examination (**JEE, 2011**) conducted towards admission to the IITs.
- Awarded the **KVPY scholarship** (2010), awarded to **150 promising young researchers** throughout India, by the Dept. of Science & Technology, Govt. of India.
- **Winner** at the **Annual All India Web-Design Contest** (2008) hosted by SJIT, Pune (India).
- Awarded the **NTSE scholarship** (2007), awarded to **1000 students** throughout India with **excellent all-round skills**, by the National Centre for Educational Research and Technology, Govt. of India.

ATTENDED
WORKSHOPS

IBRO-SIMONS Computational Neuroscience Imbizo (ISi-CNI) *January 2017*
Cape Town, South Africa
Project: Assessing the role of feature attention in object detection with CNNs.

Computational Approaches to Memory and Plasticity (CAMP) *June 2015*
Bangalore, India
Project: The role of the billions of granule cells in the cerebellum.

OTHER NOTABLE
WORK

The functional relevance of neuronal clustering (*report*) *2016*
Understanding human visual processing with deep neural networks (*pres*) *2016*
Predisposition to towards-gravity periodic motion in chicks (*report*) *2015*
Gesture Lock (*report*) *2013*

OTHER
ACTIVITIES

- Co-founded **Neuro Mondays** in 2015, a weekly meeting at CIMeC, where students discuss a review, a specific paper, or their work about cutting-edge ideas in neuroscience and psychology.
- Maintain a blog, **Meadows**, of my writings.