

# SUSHRUT THORAT

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## CONTACT INFORMATION

EMAIL: [sushrut.thorat94@gmail.com](mailto:sushrut.thorat94@gmail.com)  
WEBPAGE: [sushrutthorat.com](http://sushrutthorat.com)

## RESEARCH INTERESTS

The role of attention and awareness in the brain, and the nature of object-scene interactions in the visual system

## EDUCATION

**Ph.D. in Cognitive Neuroscience** *Ongoing*  
Donders Centre for Cognition, Radboud University, The Netherlands  
Advisors: Marius Peelen and Marcel van Gerven

**M.Sc. (Hons.) in Cognitive Neuroscience** *July 2017*  
Center for Mind/Brain Sciences (CIMEC), University of Trento, Italy  
**Thesis:** Using Convolutional Neural Networks to measure the contribution of visual features to the representation of object animacy in the brain  
Advisor: Marius Peelen

**B.Tech. in Engineering Physics** *August 2015*  
Department of Physics, Indian Institute of Technology - Bombay (IIT-B), India  
**Thesis:** *Quadcopter Flight Control using Modular Spiking Neural Networks*  
Advisor: Bipin Rajendran

## PUBLICATIONS

Thorat, S., van Gerven, M., and Peelen M. (2018) The functional role of cue-driven feature-based feedback in object recognition, *Conference on Cognitive Computational Neuroscience (CCN)*, Philadelphia, 2018. [\[PDF\]](#)

Thorat, S. and Choudhari, V. (2016) Implementing a Reverse Dictionary, based on word definitions, using a Node-Graph Architecture, *Proceedings of COLING 2016, the 26th International Conference on Computational Linguistics: Technical Papers*, Osaka, 2016, pp. 2797 – 2806. [\[PDF\]](#)

Thorat, S. and Rajendran, B. (2015) Arithmetic computing via rate coding in neural circuits with spike-triggered adaptive synapses, *International Joint Conference on Neural Networks (IJCNN)*, Killarney, 2015. doi: 10.1109/IJCNN.2015.7280822 [\[PDF\]](#)

## CONFERENCE TALKS/POSTERS

The functional role of cue-driven feature-based feedback in object recognition  
(Poster) *Donders Discussions*, Nijmegen, 2018  
(Poster) *Conference on Cognitive Computational Neuroscience (CCN)*, Philadelphia, 2018

Using convolutional neural networks to measure the contribution of visual features to the representation of object animacy in the brain  
(Poster) *Donders Discussions*, Nijmegen, 2017  
(Talk & Poster) *Rovereto Workshop on Concepts, Actions and Objects (CAOs)*, Rovereto, 2017  
(Tweets) *Brain Twitter Conference (brainTC)*, 2017

Arithmetic computing via rate coding in neural circuits with spike-triggered adaptive synapses  
(Poster) *International Joint Conference on Neural Networks (IJCNN)*, Killarney, 2015

## 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 ACHIEVEMENTS	<ul style="list-style-type: none"> <li>• Recipient of the <b>Merit Award</b> (2017), awarded to students who achieve remarkable results at the end of their Degree, by the University of Trento, Italy.</li> <li>• <b>Abstract Award Winner</b> at the Rovereto Workshop on Concepts, Actions and Objects (2017).</li> <li>• Ranked <b>721 among 450,000 students</b> in the Joint Entrance Examination (<b>JEE, 2011</b>) conducted towards admission to the Indian Institute of Technology.</li> <li>• Recipient of the <b>KVPY scholarship</b> (2009), awarded to <b>215 students</b> across India <b>with talent and aptitude for research</b>, by the Dept. of Science &amp; Technology, Govt. of India.</li> <li>• <b>Winner</b> at the <b>Annual All India Web-Design Contest</b> (2008) hosted by SJIIT, Pune (India).</li> <li>• Recipient of the <b>NTSE scholarship</b> (2007), awarded to <b>1000 students</b> across India <b>with high intellect and academic talent</b>, by the National Centre for Educational Research and Technology, Govt. of India.</li> </ul>
TECHNICAL SKILLS	<b>Programming:</b> Python (TensorFlow), MATLAB (PsychToolbox, MatConvNet, SPM) <b>Neuro-Imaging:</b> EEG, fMRI
OTHER REPORTS	<b>The functional relevance of neuronal clustering</b> <a href="#">[PDF]</a> <span style="float: right;">2016</span> <b>Understanding human visual processing with deep neural networks</b> <a href="#">[PDF]</a> <span style="float: right;">2016</span> <b>Predisposition to towards-gravity periodic motion in chicks</b> <a href="#">[PDF]</a> <span style="float: right;">2015</span> <b>Gesture Lock</b> <a href="#">[PDF]</a> <span style="float: right;">2013</span>
WORK EXPERIENCE	<b>General Secretary</b> <span style="float: right;">2014-15</span> <i>Undergraduate division - Department of Physics, IIT Bombay</i>  <b>Content Developer</b> <span style="float: right;">Summer 2013</span> <i>Avanti Fellows, Delhi</i>