

# SUSHRUT THORAT

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## CONTACT INFORMATION

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## 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  
(Talk) *Perception Day*, Nijmegen, 2018  
(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

- Recipient of the **Merit Award** (2017), awarded to students who achieve remarkable results at the end of their Degree, by the University of Trento, Italy.
- Recipient of the **Abstract Award**, awarded to **5 of the 57** accepted abstracts 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 Indian Institute of Technology (IIT).
- Recipient of the **KVPY scholarship** (2009), awarded to **215** students across India with talent and aptitude for research, by the Dept. of Science & Technology, Govt. of India.
- **Winner** at the **Annual All India Web-Design Contest** (2008) hosted by SJIIT, Pune (India).
- Recipient of the **NTSE scholarship** (2007), awarded to **1000** students across India with high intellect and academic talent, by the National Centre for Educational Research and Technology, Govt. of India.

### TECHNICAL SKILLS

**Programming:** Python (TensorFlow), MATLAB (PsychToolbox, MatConvNet, SPM)

**Neuro-Imaging:** EEG, fMRI

### TEACHING EXPERIENCE

- Co-supervisor - Research Project 3 (4 students; UG thesis project) *Radboud University, 2018*
- Guest Lecturer - Academic Skills 2 (research methods; UG course) *Radboud University, 2018*
- Teaching Assistant - Brain for AI (UG course) *Radboud University, 2018*

### WORK EXPERIENCE

#### General Secretary

2014-15

Undergraduate division - Department of Physics, IIT Bombay

#### Content Developer

Summer, 2013

Avanti Fellows, Delhi

### OTHER REPORTS

The functional relevance of neuronal clustering [[PDF](#)] *2016*

Understanding human visual processing with deep neural networks [[PDF](#)] *2016*

Predisposition to towards-gravity periodic motion in chicks [[PDF](#)] *2015*

Gesture Lock [[PDF](#)] *2013*