

SUSHRUT THORAT

CONTACT INFORMATION

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CURRENT INTERESTS

Task-based modulation of visual processing, and visual statistical learning,
in human and artificial neural networks.

EDUCATION

Ph.D. in Cognitive Neuroscience

Ongoing

Donders Centre for Cognition, Radboud University, The Netherlands
Advisors: Marius Peelen and Marcel van Gerven

M.Sc. in Cognitive Neuroscience

July, 2017

Center for Mind/Brain Sciences (CIMEC), University of Trento, Italy
GPA: 110/110 (with honors)

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
GPA: 7.64/10

Thesis: Quadcopter Flight Control using Modular Spiking Neural Networks
Advisor: Bipin Rajendran

PEER-REVIEWED PUBLICATIONS

Long papers

Thorat S, Proklova D, Peelen MV. (2019) The nature of the animacy organization in human ventral temporal cortex. *eLife* 8: e47142.

Thorat S, 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*: 2797-2806.

Thorat S, Rajendran B. (2015) Arithmetic computing via rate coding in neural circuits with spike-triggered adaptive synapses. *International Joint Conference on Neural Networks (IJCNN)*: 1-8.

Short papers

Thorat S*, Aldegheri G*, van Gerven MAJ, Peelen MV. (2019) Modulation of early visual processing alleviates capacity limits in solving multiple tasks. *Conference on Cognitive Computational Neuroscience (CCN)*: 226-229. *equal contribution

Thorat S, van Gerven MAJ, Peelen MV. (2018) The functional role of cue-driven feature-based feedback in object recognition. *Conference on Cognitive Computational Neuroscience (CCN)*: 1-4.

CONFERENCE TALKS/POSTERS

The nature of the animacy organization in human ventral temporal cortex
(Poster) *Conference on Cognitive Computational Neuroscience (CCN)*, Berlin, 2019

Modulation of early visual processing alleviates capacity limits in solving multiple tasks
(Poster) *Conference on Cognitive Computational Neuroscience (CCN)*, Berlin, 2019

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

WORKSHOPS ATTENDED

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.

Advisor: Timothy Lillicrap

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 SJIT, 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: fMRI (MVPA)

TEACHING EXPERIENCE

- Guest Lecturer - Academic Skills 2 (research methods; UG course) *Radboud University, 2019*
- Teaching Assistant - Neural Networks (UG course) *Radboud University, 2019*
- Teaching Assistant - Advanced Academic & Professional Skills (writing/reviewing research reports; Masters course) *Radboud University, 2019*
- Supervisor - Research Project 3 (3 students; UG thesis project) *Radboud University, 2018*
- 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
Undergraduate division - Department of Physics, IIT Bombay *2014-15*

Content Developer
Avanti Fellows, Delhi *Summer 2013*

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*