

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.

FUTURE GOALS

Working on the building blocks of an open-domain artificial conversational agent - contextual memory, theory of mind, continual learning, and open-domain information retrieval.

EDUCATION

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

M.Sc. (cum laude) 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

PEER-REVIEWED PUBLICATIONS

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

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.

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.

ACHIEVEMENTS/ AWARDS

- Voted **best poster/short-pitch**, among **15 posters**, in the 'Perception, Action, and Control' theme at the annual Donders Poster Session (2020)
- 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.
- 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	<p>Programming: Python (TensorFlow, PyTorch), MATLAB (PsychToolbox, MatConvNet, SPM, CoSMoMVPA), Javascript (jsPsych)</p> <p>Neuro-Imaging: fMRI (MVPA)</p>	
CONFERENCE TALKS/POSTERS	<p>Body silhouettes as features in visual search: evidence from spatially-global attention modulation in visual cortex (Poster) <i>Donders Poster Session</i>, Nijmegen, 2020 (Talk) <i>Neuromatch conference 3.0</i>, Online, 2020</p> <p>The nature of the animacy organization in human ventral temporal cortex (Poster) <i>Conference on Cognitive Computational Neuroscience (CCN)</i>, Berlin, 2019</p> <p>Modulation of early visual processing alleviates capacity limits in solving multiple tasks (Poster) <i>Conference on Cognitive Computational Neuroscience (CCN)</i>, Berlin, 2019</p> <p>The functional role of cue-driven feature-based feedback in object recognition (Talk) <i>Perception Day</i>, Nijmegen, 2018 (Poster) <i>Donders Discussions</i>, Nijmegen, 2018 (Poster) <i>Conference on Cognitive Computational Neuroscience (CCN)</i>, Philadelphia, 2018</p> <p>Using convolutional neural networks to measure the contribution of visual features to the representation of object animacy in the brain (Poster) <i>Donders Discussions</i>, Nijmegen, 2017 (Talk & Poster) <i>Rovereto Workshop on Concepts, Actions and Objects (CAOs)</i>, Rovereto, 2017 (Tweets) <i>Brain Twitter Conference (brainTC)</i>, 2017</p> <p>Arithmetic computing via rate coding in neural circuits with spike-triggered adaptive synapses (Poster) <i>International Joint Conference on Neural Networks (IJCNN)</i>, Killarney, 2015</p>	
WORKSHOPS ATTENDED	<p>IBRO-SIMONS Computational Neuroscience Imbizo (ISi-CNI) <i>January, 2017</i> Cape Town, South Africa Project: Assessing the role of feature attention in object detection with CNNs. Advisor: Timothy Lillicrap</p> <p>Computational Approaches to Memory and Plasticity (CAMP) <i>June, 2015</i> Bangalore, India Project: The role of the billions of granule cells in the cerebellum.</p>	
TEACHING EXPERIENCE	<ul style="list-style-type: none"> Teaching Assistant - Advanced Academic & Professional Skills (writing/reviewing research reports; Masters course) <i>Radboud University, 2020</i> Guest Lecturer - Academic Skills 2 (research methods; UG course) <i>Radboud University, 2019</i> Teaching Assistant - Neural Networks (UG course) <i>Radboud University, 2019</i> Teaching Assistant - Advanced Academic & Professional Skills (writing/reviewing research reports; Masters course) <i>Radboud University, 2019</i> Supervisor - Research Project 3 (3 students; UG thesis project) <i>Radboud University, 2018</i> Co-supervisor - Research Project 3 (4 students; UG thesis project) <i>Radboud University, 2018</i> Guest Lecturer - Academic Skills 2 (research methods; UG course) <i>Radboud University, 2018</i> Teaching Assistant - Brain for AI (UG course) <i>Radboud University, 2018</i> 	
REVIEWING WORK	eLife'20, Monk Prayogshala'19 , Conference on Cognitive Computational Neuroscience (CCN)'19	
WORK EXPERIENCE	<p>General Secretary Undergraduate division - Department of Physics, IIT Bombay <i>2014-15</i></p> <p>Content Developer Avanti Fellows, Delhi <i>Summer 2013</i></p>	