SUSHRUT THORAT

Contact Information

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Current Interests

The role of attention and awareness in artificial/human neural networks, and the nature of object-scene interactions in the human 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. 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. 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, pp. 1-8. [PDF]

Short papers

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, pp. 1-4. [PDF]

Pre-print Publications

Thorat, S., Proklova, D. and Peelen, M. (2019) The nature of the animacy organization in human ventral temporal cortex, *arXiv preprint*, arXiv:1904.02866. [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

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 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: 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*