

# Rakesh Sengupta

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Department of Electrical Engineering and Computer Science  
Lassonde School of Engineering  
York University  
4700, Keele Street  
Toronto, M3J1P3  
Canada  
Phone: +1-6475466972  
Email: [rakesh@cse.yorku.ca](mailto:rakesh@cse.yorku.ca)

## Current Position

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Post-doctoral Researcher, Department of Electrical Engineering and Computer Science, York University, Toronto, Canada

## Areas of Specialization

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Theoretical, Computational, and behavioral neuroscience, MEG based functional connectivity, EEG/ERP with BCI applications, Signal Processing with MATLAB and FORTRAN. Computational vision application with C++.

## Positions Held

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2014-2015	Research Associate, Center for Cognitive Science, Dr. B. V. Raju Institute of Technology (BVRIT) - Narsapur, India
2014-2014	Visiting PhD Scholar (Into-Trento Program for Advanced Research), Center for Mind/Brain Sciences (CiMEC), University of Trento, Italy
2013-2014	Senior Research Fellow, Center for Cognitive Science, Dr. B. V. Raju Institute of Technology (BVRIT) - Narsapur, India
2012-2012	Visiting Research Scholar, CiMEC, University of Trento, Italy
2009-2011	Research Associate, Center for Computational Natural Sciences and Biotechnology, International Institute of Information Technology - Hyderabad, India
2008-2009	Experience Designer, Navaraga Information Technologies Pvt. Ltd., India
2005-2008	Junior Research Fellow, School of Chemistry, University of Hyderabad, India

## Projects

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2013-2014	Real-time EEG-based BCI for wheelchair controller built to assist ALS patients
2011-2012	Integrative Behavioural and Neurophysiological Studies of Normal and Autistic Cognition Using Video Game Environments
2009-2011	Mission project for virtual labs

## Education

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2015	PhD in Cognitive Sciences, University of Hyderabad, India
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2005

MSc in Chemistry, University of Calcutta, India

## Grants, Honors and Awards

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2012, 2014	Visiting Research Fellowship, Indo-Trento Project for Advanced Research
2013	Senior Research Fellowship, Department of Science and Technology, India
2005	Graduate Aptitude Test in Engineering, All India Rank - 42
2004	Council for Scientific and Industrial Research - University Grants Commission (CSIR-UGC), India, Junior Research Fellowship & Lecturership

## Workshops Conducted

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2015	Quantum Mechanics for Philosophers and Social Scientist, Academic Centre of Indian Council of Philosophical Research (ICPR), Lucknow, Jan 1-10, 2015
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## Publications

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### Journal Articles

2017	Rakesh Sengupta, Raju Surampudi Bapi, Anindya Pattanayak (2017), "From Neural Network To Psychophysics Of Time: Exploring Emergent Properties Of RNNs Using Novel Hamiltonian Formalism" <i>bioRxiv</i> 125849
2017	Rakesh Sengupta, Bapi Raju Surampudi, and David Melcher (2017), "Big and small numbers: empirical support for a single, flexible mechanism for human numerosity perception". <i>Attention, Perception, &amp; Psychophysics</i> 79: 253-266
2015a	Rakesh Sengupta (2015), "Pre-stimulus oscillatory brain states and cognition: a theoretical approach", <i>arXiv preprint arXiv:1508.02257</i>
2014	Rakesh Sengupta, Bapi Raju Surampudi, and David Melcher (2014), "A visual sense of number emerges from the dynamics of a recurrent on-center off-surround neural network", <i>Brain Research</i> , 1582: 114-124
2014a	André Knops, Manuela Piazza, Rakesh Sengupta, Evelyn Eger, and David Melcher (2014) "A shared, flexible neural map architecture reflects capacity limits in both visual short term memory and enumeration", <i>Journal of Neuroscience</i> 34(30): 9857-9866.
2014b	Rakesh Sengupta, D. Hari Krishna, I. A. Pasha, and T. Satya Savithri (2014) "Brain Computer Interface for mobility-a case study with ALS patient", <i>International Journal of Applied Engineering Research</i> , 9: 26055-26070

### Dissertation

2015	Rakesh Sengupta (2015), "Computational and empirical investigations of number, time, and memory", <i>PhD dissertation</i>
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Conference presentations: oral

- 2014 Rakesh Sengupta, Bapi Raju Surampudi, Prajit Basu and David Melcher (March, 2014), "Spatial cueing and serial recall", *Annual conference on Cognitive Science, Delhi, India*
- 2014 Rakesh Sengupta (February, 2014), "How embodied is time?", *National Seminar on Embodied Cognition, Hyderabad, India*

Conference presentations: poster

- 2017 Rakesh Sengupta, Omar Abid, Asheer Bachoo, and John K. Tsotsos (May, 2017) "Attentional blink as a product of attentional control signals: A computational investigation" *Vision Science Society Annual Conference, Florida, USA* Rakesh
- 2016 Sengupta, Sang-Ah Yoo, Calden Wloka, Toni Kunić, and John K. Tsotsos (Nov, 2016), "Beyond slots and resources: An integrative account of visual working memory", *Society for Neuroscience Annual Conference, San Diego, USA* Rakesh
- 2015 Sengupta, Bapi Raju Surampudi, David Melcher, and Phillipp Rhinou (May, 2015), "The influence of pre-stimulus brain oscillations on the visual sense of number: an MEG study", *Vision Science Society Annual Conference, Florida, USA* Rakesh Sengupta, Bapi Raju Surampudi, Prajit Basu and David Melcher
- 2014 (May, 2014), "Accounting for subjective time expansion based on a decision, rather than perceptual, mechanism", *Vision Science Society Annual Conference, Florida, USA* Rakesh Sengupta, Bapi Raju Surampudi, and David Melcher,
- 2013 (May, 2013), "Subitizing and estimation emerge from a computational saliency map model", *Vision Science Society Annual Conference, Florida, USA* Rakesh
- 2011 Sengupta and Bapi Raju Surampudi (December, 2011), "Saliency map and spatial attention", *Federation of Asian and Oceanian Neuroscience Societies, Lucknow, India* Rakesh Sengupta, R. Padmanaban, and Susanta Mahapatra
- 2006 (December, 2006), "Quantum Wave Packet Dynamics of Lithium Hydrogen system" *Theoretical Chemistry Symposium, Thiruchirapally, India.*