Saptarshi Ghosh

Researcher
Kavli Institute for Systems Neuroscience
NTNU: Norges teknisk-naturvitenskapelige universitet
Olav Kyrres gate 9, 7030
Trondheim, Norway

saptarshi.ghosh@ntnu.no
sapta15@gmail.com
+47 45847236 / sapta15
0000-0001-8861-5269
sapta15/ amisapta15/

Research Interests

Computational Neuroscience, Spiking Neural Networks, Graph Theory, Non-linear Dynamics, large-scale Neural Dynamics

Appointments

2020 – Present **Researcher**
PI: Prof.Yaseer Roudi
Kavli Institute for Systems Neuroscience
Trondheim, Norway

Education

2014 – 2020 **Ph.D. in Network Science**
Title: Chimera State in Multiplex Networks
Supervisor: Prof. Sarika Jalan
Indian Institute of Technology Indore
Indore, India

- Demonstrated Chimera States in Multiplex Networks with delay and inhibition
- Developed a guidance scheme to design chimera state without special prerequisites

2012 – 2014 **Master of Science in Physics**
CGPA: 7.7
Indian Institute of Technology Kanpur
Kanpur, India

2009 – 2014 **Bachelor of Sciences**
Percentage: 61.6%
Asutosh College, University of Calcutta
Kolkata, India

Experiences

2020 Article reviewer
E Chaos, Solitons & Fractals, Elsevier
A Chaos, AIP

2020 Co-participant in Neuromatch Academy (2020) Group Project "Neural integration of reward information in subsequent decisions"

- Identified brains area relevant for Reward and Response
- Demonstrated possible association between Reward and Response (Action) in single trail history using Granger causality
- Source Steinmetz Dataset, Article, Dataset
- Project Overview and Codes
- Project presentation

2018 Project Asistant in DST-DAAD Collaborative Grant with German Research Group
Advisor: Dr. Anna Zakarova, TU Berlin, Berlin, Germany

- Collaborative Research Visit to TU Berlin, Berlin, Germany

- Applied the guidance Scheme to design Solitary States

2015 Teaching Assistant
- Physics -I : Modern Physics (PH 105)
- Physics Lab (PH 156)

2017 Mentor
- 2 M.Sc Students in their M.Sc. thesis Work
- Bihabasu Patra (Summer Intern), resulted in a publication

2014 M.Sc. Project on "'Making Physically Useful Nanostructures with Focused Ion Beam"
Advisor: Prof. H.C. Verma, Indian Institute of Technology Kanpur, kanpur, India
- Fabricated micro- and nano- scale capacitors of various thickness and separation using Focused Ion Beam to investigate geometrical correction to the Child-Langmuir law
- Designed a micro- and nano- scale radiation detector

2013 Summer Project on "Different aspects of Quantum Communication"
Advisor: Dr. Ujjwal Sen, Harish-Chandra Research Institute, Prayagraj, India
- Investigated quantum cryptographic protocols (BB-84, EK-91) for secured communications

Publications

Dissertation Work

1. **S Ghosh**, L Schülen, AD Kachhvah, A Zakharova and S Jalan (2019) Taming chimeras in networks through multiplexing delays, EPL (Europhysics Letters) 127 (3), 30002
2. **S Ghosh** and S Jalan (2018) Engineering chimera patterns in networks using heterogeneous delays, Chaos (Fast Track) 28, 071103 (Selected as Editor's Pick article)
3. **S Ghosh**, A Zakharova and S Jalan (2018) Non-identical multiplexing promotes chimera states, Chaos, Solitons & Fractals, 106, 56-60
4. S Jalan, **S Ghosh** and B Patra (2017) Is repulsion good for the health of chimeras?, Chaos (Fast Track) 27 (10), 101104
5. **S Ghosh**, A Kumar, A Zakharova and S Jalan (2016) Birth and death of chimera: Interplay of delay and multiplexing, EPL (Europhysics Letters) 115 (6), 60005
6. **S Ghosh**, S. K. Dwivedi, MV Ivanchenko, Sarika Jalan (2016) Interplay of inhibition and multiplexing: Largest eigenvalue statistics, EPL (Europhysics Letters) 115 (1), 10001
7. **S. Ghosh**, S. Jalan (2016) Emergence of Chimera in Multiplex Network, International Journal of Bifurcatio and Chaos 26 (07), 1650120

Collaborative Work

1. MA Ganaie, **S Ghosh**, N Mendola, M Tanveer and S Jalan (2020) Identification of chimera using machine learning, Chaos 30 (6), 063128
2. L Schülen, **S Ghosh**, AD Kachhvah, A Zakharova and S Jalan (2019) Delay engineered solitary states in complex networks, Chaos, Solitons & Fractals 128, 290-296
3. J Sawicki, **S Ghosh**, S Jalan and A Zakharova (2019) Chimeras in multiplex networks: interplay of inter-and intra-layer delays, Frontiers in Applied Mathematics and Statistics 5, 19
4. A Singh, **S Ghosh**, S Jalan and J Kurths (2015) Synchronization in delayed multiplex networks, EPL (Europhysics Letters) 111 (3), 30010 (Selected as Editor's Pick Article)

Talks and Posters

September, 2019	**Delivered a talk on "Taming chimera state using heterogeneousde Delays"** Dynamic Days Europe, Rostock, New Germany
September, 2019	**Delivered a talk on "Taming chimera state in Networks"** Research Visit to Kavli-NTNU, Trondheim, Norway
August, 2019	**Delivered a talk on "Taming chimera state in Networks"** Research Visit to ICS-CAS, Prague, Czech Republic
July, 2019	**Presented a Poster on "Taming chimera state using heterogeneousde Delays"** INSPIRE meet, New Delhi, India
December, 2018	**Delivered a talk on "Chimera in Networks"** DDST-DAAD collaborative visit to TU Berlin, Berlin, Germany
October, 2018	**Delivered a talk on "Chimera in Multiplex Networks"** Conference on Non-linear Systems and Dynamics, JNU, New Delhi
March 2015	**Presented a poster on "Delay enhances synchronization in distant entities"** Conference on Non-linear Systems and Dynamics, IISER Mohali, Punjab

Merits

2015 – 2020	**INSPIRE Fellowship** Depatment of Science and Technology , Govt. of India
2009 – 2014	**INSPIRE Scholarship** Depatment of Science and Technology , Govt. of India
March, 2015	**MCM Scholarship** Govt. of West Bengal

Organization Experiences

- Member of the organizing team for Global Initiative of Academic Networks (GIAN) workshop on "Network Science and Multi-Agent Systems" held during May 30 - June 10, 2016 at Indian Institute of Technology Indore
- Aided in organizing GIAN workshop on "Biomathematics: from gene expression to bone mechanics" during August 15 - 19, 2016 at Indian Institute of Technology Indore.
- Organizing team member of short-term course on "Statistics in Systems Biology and Programming in R" under GIAN scheme of MHRD, Government of India, held during August 22 - 27, 2016 at Indian Institute of Technology Indore.
- Coordinator of Weekly Journal Club and other academic activities at Complex Systems Lab
- Active member of Mystic Hues (Photography Club, IIT-Indore)

Technical Skills

Programming

Julia, Python, Latex	Extensive User
C,C++,git,bash	competent
R	Novice

Software

MATLAB, Octave, Office/G-Suite	Extensive User
Linux, Github	Daily User
Cytoscape, Gephi, Networkx, Xpp-Auto	competent

Other Skills

Language

Bengali	Mother Tongue
English	Fluent
Hindi	Intermediate

Hobbies

DSLR Photography	Intra IIT-I Winner
Digital Drawing	competent
Reading	Stories/SciFi

Personal Information

- **Date of Birth:** 15th February, 1992
- **Nationality:** Indian
- **Permanent Address:** Ward No : 4 , Ghosh Para, P.O.: Mekhliganj, Dist. : Koch Bihar (West Bengal) 735304 India

References

Prof. Yaseer Roudi
Kavli Institute of Systems Neuroscience
Norwegian University of Science and Technology
Trondheim, Norway
yasser.roudi@ntnu.no

Prof. Sarika Jalan
Complex Systems Lab
Indian Institute of Technology Indore
Indore, India
sarika@iiti.ac.in