

Swarnendu Moitra

LINGUIST · NEUROSCIENTIST · ELECTRONICS ENGINEER

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Employment

Research Assistant

London, United Kingdom

QUEEN MARY UNIVERSITY OF LONDON (DEPARTMENT OF LINGUISTICS)

Aug. 2021 –

NEW YORK UNIVERSITY, ABU DHABI (COMPUTATIONAL RESEARCH BUILDING)

- Project: [Systematicity and Variation In Word Structure Processing Across Languages \(SAVANT\)](#)
- PI: [Linnaea Stockall](#), Co-Is: [Dustin A. Chacón](#), [Alec Marantz](#)
- More info [\[Link\]](#)

Education

M.Phil in Linguistics – (72 %)

Kolkata, INDIA

JADAVPUR UNIVERSITY

Aug. 2019 – May. 2021

M.A in Linguistics – (9.53 / 10)

Kolkata, INDIA

JADAVPUR UNIVERSITY

Jul. 2017 – Jun. 2019

B.Tech in Electronics and Communications Engineering – (7.68 / 10)

Kolkata, INDIA

WEST BENGAL UNIVERSITY OF TECHNOLOGY

Aug. 2013 – May. 2017

Skills

Languages	Bangla (native), Hindi (near - native), English (native like proficiency), German (basic)
Programming	python, R, Julia, JavaScript, MATLAB
packages/lib	eelbrain, mne-python, tidyverse, brms, lme4, Scikit-learn, tensorflow, spaCy
Mark-up	LaTeX, (R)Markdown, quarto, HTML
Experiments	jsPsych, presentation, Linger, OpenSesame, PsychoPy, Ibex Farm
Exp. Hardware	fMRI (Siemens), EEG (BioSemi), MEG (Kanazawa Institute of Technology)

Research Projects

Systematic behavioural and neural differences between morphosyntactic and morphosemantic processing

Feb 2021 - Ongoing

DR. DUSTIN A. CHACÓN (NEW YORK UNIVERSITY, ABU DHABI & UNIVERSITY OF GEORGIA)

DR. LINNAEA STOCKALL (QUEEN MARY UNIVERSITY OF LONDON)

Collaborator(s)

PROF. ALEC MARANTZ (NEW YORK UNIVERSITY)

The ESRC funded SAVANT project (Systematicity and Variation In Word Structure Processing Across Languages: A Neuro-Typology Approach) is a program of Neuro-Typology, which combines the extremely high temporal resolution of Magnetoencephalography (MEG) and Encephalography (EEG) with the simplicity and practicality of a single word reading paradigm implemented systematically across a typologically diverse and understudied set of languages.

lexiVAULT - A Lexical database for understudied language

Feb 2021 - Ongoing

DR. SAMANTHA WRAY (NEW YORK UNIVERSITY, ABU DHABI & DARTMOUTH COLLEGE)

HIND SADDIKI (R.A) (NEW YORK UNIVERSITY)

Collaborator(s)

- Design tools to scrape data from the internet and augment with available corpus
- Design a rule base stemmer for each language
- Design and implement ML models for the calculation of lexical statistics
- Design the interface with open source practices and make it available online for public use

Effects of scope interactions : An experimental study on Scrambling

Feb 2020 - Ongoing

DR. PAUL MARTY (UNIVERSITY COLLEGE LONDON)

Collaborator(s)

DR. ISHANI GUHA (MASSACHUSETTS INSTITUTE OF TECHNOLOGY)

- Our aim is to experimentally trace the effects of scope interactions between a modified numeral quantifier subject and a universal quantifier object in SOV word order Languages.
- In this study, we want to experimentally investigate **if object scrambling freezes the scope of an object universal quantifier**.
- We designed a series of experiments which included the Truth Value Judgement Task and Picture Selection Task, coupled with norming studies.
- Responsibilities : Design Experimental items, Integrate online experimental tools such as jsPsych and Amazon Mechanical Turk for the Experiment. Host the Experiment on a remote Cloud server and deploy Node.js runtime to upload data of the trials into a database.

Decoding Visual Stimulus from Visual Cortex Data, (Neuromatch Project)

July 2020

FATEMEH ABDOLLAHI (UNIVERSITY OF ALBERTA), REKHA CRAWFORD (SWARTHMORE COLLEGE)

Collaborator(s)

SREEKAR REDDY (UNIVERSITY OF CINCINNATI), PRANJAL GUPTA (INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY)

- Neuropixel Data from the visual cortex of a mouse (Steinmetz dataset) was decoded using a variety of classifiers such as LDA and Random Forest as a part of group project at Neuromatch Academy.
- Classifiers were able to predict the stimulus vs. No stimulus conditions as well as left vs. right contrast with reasonable accuracy. Random Forest classifier provided the highest classification accuracy based on average firing rate data compared to other classifiers

Manifestation of Agrammatism in Bengali - English Bilingual Aphasia

Sept 2019 - Oct 2019

DR. ARPITA BOSE, (UNIVERSITY OF READING)

Collaborator(s)

PROF. NILADRI SEKHAR DASH (INDIAN STATISTICAL INSTITUTE - KOLKATA)

- As an intern, my work was to transcribe Audio data of Aphasic Patients (Verbatim) of a Narration task
- Quantitative Production Analysis also known as QPA was undertaken for analysis of the aphasic sentence production, which was later compared with healthy adult controls.

Neurophysiology of Scope Ambiguity in Head-Final Languages: Evidence from Bangla

Jan 2019 - May 2019

DR. SAMIR KARMAKAR, JADAVPUR UNIVERSITY

Collaborator(s)

PROF. DIPAK GHOSH, JADAVPUR UNIVERSITY

- We predict that sentences which is inherently ambiguous(with multiple readings) will require more semantic processing without context and is there a default reading for such situations?
- We implemented a 2x2 design, where we crossed for Quantifier(Universal/Existential) over Plain numeral(Distributive/Non-distributive). We investigated by using self-paced reading (SPR) and Event related potential (ERP) paradigms. Theoretically the condition Existential - Non-distributive will be the most ambiguous reading and we predicted this condition would give the highest peak for the N400 component in ERP.

Publications & Presentations

Manuscripts

How Long is Long? Word length effects in reading correspond to minimal graphemic units: An MEG study in Bangla

[Preprint]

WITH DUSTIN A. CHACÓN AND LINNAEA STOCKALL

submitted

Impossible Numbers: Experimental Investigations into the Marked Values of Phi Features

osf.io/b7yex

WITH JANE MIDDLETON AND DANIEL HARBOUR

in prep

Interaction between Word Order, Quantifier Scope and Lexical Information.

osf.io/bkz72

WITH ISHANI GUHA AND PAUL MARTY

in prep

Publications

Study and analysis of data encryption techniques and implementation using MATLAB programming

Kolkata, India

ANANYA BANERJEE, [SWARNENDU MOITRA](#), URMEE KARMAKAR, SAYAN GHOSH, SAHELI DATTA AND SANDIPAN DEBNATH

Published

International Journal of Advanced Research in Computer Engineering and Technology (IJARCET)

Volume 06, Issue 05, May 2017, ISSN : 2278 - 1323

Proceedings

Interaction between Word Order, Quantifier Scope and Lexical Information: Experimental Evidence from Bangla.

ISHANI GUHA, [SWARNENDU MOITRA](#), PAUL MARTY

Forthcoming

in Proceedings of the 57th Annual Meeting of the Chicago Linguistic Society.

Inverse Scope in Scrambling Languages: the case of Bangla

ISHANI GUHA, [SWARNENDU MOITRA](#), PAUL MARTY

IN PRESS

in Proceedings of the 39th West Coast Conference on Formal Linguistics.

Conference Presentations

Syntactic vs. semantic computation in posterior temporal lobe: an MEG study on Bangla nominal prefixes.

[Marseille, France](#)

[SWARNENDU MOITRA](#), DUSTIN A. CHACÓN AND LINNAEA STOCKALL

Accepted

The Society for the Neurobiology of Language [SNL-2023],

The Palais du Pharo, Marseille, 24 - 26 October, 2023

Morphological decomposition in bilateral fusiform areas in Bangla: An MEG study.

[Marseille, France](#)

[SWARNENDU MOITRA](#), DUSTIN A. CHACÓN AND LINNAEA STOCKALL

Accepted

The Society for the Neurobiology of Language [SNL-2023],

The Palais du Pharo, Marseille, 24 - 26 October, 2023

The Effect of Determiner Type on Quantifier Scope Ambiguity in English and Bengali

[Pittsburgh, USA](#)

ISHANI GUHA, [SWARNENDU MOITRA](#), AND PAUL MARTY

Presented

Human Sentence Processing [HSP - 36],

University of Pittsburgh, Pittsburgh, 8 - 11 March, 2023

How long is long? An MEG study of M100 response in tracking word length in Bangla/Bengali

[New Delhi, INDIA](#)

[SWARNENDU MOITRA](#), DUSTIN A. CHACÓN AND LINNAEA STOCKALL

Presented

9th Annual Conference of Cognitive Science [ACCS-9],

Indian Institute of Technology, Delhi, 8 - 10 December, 2022

How long is long? M100 response in Bangla tracks number of phonemes not graphemes of glyphs

[Philadelphia, USA](#)

[SWARNENDU MOITRA](#), DUSTIN A. CHACÓN AND LINNAEA STOCKALL

Presented

The Society for the Neurobiology of Language [SNL-2022],

Loews Philadelphia Hotel, Philadelphia, 6 - 8 October, 2022

Morphological recomposition and the concrete/abstract distinction in Bangla

[York, UK](#)

[SWARNENDU MOITRA](#), DUSTIN A. CHACÓN AND LINNAEA STOCKALL

Presented

Architectures and Mechanisms for Language Processing [AMLaP-2022],

The Principal, York, 7 - 9 September, 2022

Complex word de/recomposition across languages: lexical decision and MEG studies

[Zurich, Switzerland](#)

LINNAEA STOCKALL, DAVE KENNETH CAYADO, DUSTIN ALFONSO CHACÓN, KARIN KAVCIC, [SWARNENDU MOITRA](#),

Presented

CHRISTINA MANOULIDOU, ALEC MARANTZ, SUHAIL MATAR, BOJANA RISTIĆ, SAMANTHA WRAY AND ROK ŽAUCER

The Crosslinguistic Perspectives on Processing and Learning [X-PPL 2022],

University of Zurich, 12 - 13 September, 2022

Interaction between Word Order, Quantifier Scope and Lexical Information: Experimental Evidence from Bangla

[Illinois, USA](#)

ISHANI GUHA, [SWARNENDU MOITRA](#) AND PAUL MARTY

Presented

Annual Meeting of the Chicago Linguistic Society 57 [CLS - 57],

University of Chicago, 6 - 8 May, 2021

Inverse Scope in Scrambling Languages: the case of Bangla

[Tucson, USA](#)

ISHANI GUHA, [SWARNENDU MOITRA](#) AND PAUL MARTY

Presented

West Coast Conference on Formal Linguistics 39 [WCCFL - 39],

University of Arizona, 8 - 11 April, 2021.

In Search of Inverse Scope in Bangla

ISHANI GUHA, [SWARNENDU MOITRA](#) AND PAUL MARTY

11th (Formal) Approaches to South Asian Languages, [(F)ASAL - 11]

University of Minnesota 26th - 28th March 2021

[Minneapolis, USA](#)

Presented

Invited Talks

Understudied languages in neuroscience: from Slovenian to Arabic and more

[Ljubljana, Slovenia](#)

[SWARNENDU MOITRA](#)

V nevroznanosti šibkeje zastopani jeziki: od slovenščine do arabščine in še naprej

University of Ljubljana 18th May 2023

Summer Schools, Internships & Workshops

SUMMER SCHOOLS

- | | | |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| 2022 | SMLP 2022 , Sixth Summer School on Statistical Methods for Linguistics and Psychology,
(Org. by : University of Potsdam, Potsdam) | Germany |
| 2021 | CuttingEEG , 5th symposium for cutting edge methods on EEG research.
(Org. by : Le Cube Université Aix-Marseille, Aix-en-Provence) | France |
| 2020 | Neuromatch Academy , Online summer school for Computational Neuroscience
(Org. by : IEEE brain, Facebook Reality labs, UPenn, DeepMind and others) | Online |
| 2019 | ESSLI - 31 , European Summer School in Logic, Language and Information
(Org. by : University of Latvia) | Riga, Latvia |

INTERSHIPS

- | | | |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| 2018-19 | UGC-UPE II project - Intercultural Communication in Multilingual Urban Spaces , part time field assistant for data collection and transcription
(Dept. of Linguistics, University of Calcutta - July 2018 - August 2019) | Kolkata |
| 2019 | Neuro Cognition Lab - Sir C V RAMAN Centre for Physics and Music , Running Psycho/Neurolinguistic Experiments
(Jadavpur University, January 2019 - August 2019) | Kolkata |
| 2019 | Linguistic Research Unit (L.R.U) , transcribe Audio data of Aphasic Patients (Verbatim) of a Narration task
(Indian Statistical Institute, Kolkata - Sept'2019) | Kolkata |

WORKSHOPS

- | | | |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 2019 | Computational Cognitive Science , Innovations and Trends in Computational Cognitive Science,
(Org. by : Banasthali Vidyapith) | Banasthali, India |
| 2019 | Field Linguistics , Language Documentation, data management and transcription,
(Org. by : Jadavpur University) | Kolkata, India |
| 2019 | Language Acquisition , Documenting child language acquisition in lesser-known languages,
(Org. by : Jadavpur University) | Kolkata, India |
| 2018 | Applied Linguistics , Experimental and Empirical Methods in Linguistics,
(Org. by : Indian Institute of Technology : B.H.U) | Varanasi, India |
| 2017 | Language Acquisition , Three Day Workshop on "Second Language Acquisition",
(Org. by : Jadavpur University) | Kolkata, India |

Grants and Achievements

United Kingdom Research and Innovation (UKRI) - Global Talent

[2021 - 2026](#)

ENDORSEMENT

- Endorsed by **UKRI**, sponsored by the Department for Science, Innovation and Technology (DSIT) in support of the Global Talent Migrant Visa for conducting Neuroscience research in the UK.

Rashtriya Uchchatar Shiksha Abhiyan (RUSA) - Travel Grant for Overseas Conference

Jun 2019

AWARDED

- Received **1125 USD** Travel Grant in support for paper presentation at **25th Himalayan Languages Symposium (HLS-25)** held at University of Sydney, Australia

Neuromatch Academy Summer School

July 2020

FULL SCHOLARSHIP

- Received Full scholarship to attend Computational Neuroscience Summer School

Swami Vivekananda Merit-cum-Means Scholarship

2019-20

AWARDED

- Received **805 USD** scholarship per-annum for MPhil.

University Grants Commission (UGC) - (NET) National Eligibility Test in Linguistics

Dec 2018

QUALIFIED

- Qualified for Assistant Professor in India

Professional Experience

TEACHING

- | | | |
|------|-----------------------------------------------------------------------------------------------------------------------------|-------------------|
| 2023 | Teaching Assistant , London Summer School on Neurolinguistics
(Org. by : Queen Mary University of London) | <i>London, UK</i> |
| 2022 | Teaching Assistant , London Summer School on Neurolinguistics
(Org. by : Queen Mary University of London) | <i>London, UK</i> |

OTHERS

- | | | |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| 2020 | Local Organizing Committee , International Conference on Rhythm in Speech and Music(ICRSM 2020)
(Org. by : Jadavpur University) | <i>Kolkata, India</i> |
| 2019 | Volunteer , 7th International Conference on Endangered and Lesser Known Languages
(Org. by : Jadavpur University) | <i>Kolkata, India</i> |
| 2018 | Volunteer , 46th All India Conference of Dravidian Linguists
(Org. by : Jadavpur University) | <i>Kolkata, India</i> |

Extracurricular Activity

LingClub, Jadavpur University

Jadavpur University

CO-FOUNDER AND COORDINATOR

Aug. 2018 - PRESENT

- The LingClub of the School of Languages and Linguistics, Jadavpur University, is an initiative by the current students of the school to concert their efforts to organise 1. LINGVISTIKO (Colloquium) 2. ARTICULATE (Reading Group) 3. ASSIMILATION(Outreach Prog)

Hindustani Classical Flautist

India

TRAINED IN NORTH - INDIAN STYLE CLASSICAL MUSIC

2016 - Present

- Completed 2nd Year Diploma in Hindustani Classical Music : Bamboo Flute (Bansuri)

Referees

Dr Dustin A. Chacón (PhD, University of Maryland)

University of Georgia

(ASSISTANT PROFESSOR) IN DEPARTMENT OF LINGUISTICS

dustin.chacon@uga.edu

Dr Linnaea Stockall (PhD, MIT)

Queen Mary University of London

(ASSOCIATE PROFESSOR) IN DEPARTMENT OF LINGUISTICS

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