Swarnendu **Moitra**

LINGUIST · NEUROSCIENTIST · ELECTRONICS ENGINEER

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Employment

Research Assistant   *London, United Kingdom*

QUEEN MARY UNIVERSITY OF LONDON (DEPARTMENT OF LINGUISTICS)

NEW YORK UNIVERSITY, ABU DHABI (COMPUTATIONAL RESEARCH BUILDING)   *Aug. 2021 –*

- 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)   *PI(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)   *PI(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)

Dr. Ishani Guha (Massachusetts Institute of Technology)

Guide(s)

- 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)

Sreekar Reddy (University of Cincinnati), Pranjal Gupta (Indian Institute of Technology, Bombay)

Collaborator(s)

- 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)

Prof. Niladri Sekhar Dash (Indian Statistical Institute - Kolkata)

Guide(s)

- 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

Prof. Dipak Ghosh, Jadavpur University

Guide(s)

- 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? Disentangling effects of length in early brain responses in reading: An MEG study in Bangla

osf.io/ptf63

with Dustin A. Chacón and Linnaea Stockall

in prep

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, Christina Manouilidou, Alec Marantz, Suhail Matar, Bojana Ristić, Samantha Wray and Rok Žaucer *Presented*

`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 *Minneapolis, USA*

Ishani Guha, Swarnendu Moitra and Paul Marty *Presented*

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

University of Minnesota 26th - 28th March 2021

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	**ESSLLI - 31**, European Summer School in Logic, Language and Information (Org. by : **University of Latvia**)	*Riga, Latvia*

Internships

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

Rashtriya Uchchatar Shiksha Abhiyan (RUSA) - Travel Grant for Overseas Conference *Jun 2019*

Awarded

- Recieved **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**) | *London, UK* |

| 2022 | **Teaching Assistant**, London Summer School on Neurolinguistics
(Org. by : **Queen Mary University of London**) | *London, UK* |

Others

| 2020 | **Local Organizing Committee**, International Conference on Rhythm in Speech and Music(ICRSM 2020)
(Org. by : **Jadavpur University**) | *Kolkata, India* |

| 2019 | **Volunteer**, 7th International Conference on Endangered and Lesser Known Languages
(Org. by : **Jadavpur University**) | *Kolkata, India* |

| 2018 | **Volunteer**, 46th All India Conference of Dravidian Linguists
(Org. by : **Jadavpur University**) | *Kolkata, India* |

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

`l.stockall@qmul.ac.uk`