Baorian Nuchged (Rian Bao)

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Linguistics PhD student

Education

University of Texas at Austin   Aug 2023
Linguistics - Neurolinguistics & Phonetics, PhD Program   Austin, Texas
Projects: Compressed sensing in neuronal speech information processing; Acoustic
analysis of the speech with face mask; Second language speech perception

Beijing Language and Culture University   Sep 2020 - Jul 2023
Language Intelligence and Technology Master (with merit)   Beijing, China
Thesis: Quantifying information loss in second language speech using information theory

East China Normal University   Aug 2015 - May 2019
English Bachelor   Shanghai
Thesis: A Phonological Study on Chinese Loanwords in Mongolian (Outstanding
Graduation Dissertation Award)

Research Experience

Graduate Student Researcher at Neurolinguistics Lab at University of Texas at Austin   Aug 2023 - Present
Advised by Dr Fernando Llanos

I'm working on the mechanisms of auditory information processing in the human brain, focusing on uncovering the
compressed sensing processes and examining how they differ from those found in machine processing such as
uniform sampling and the Nyquist theorem.

Graduate Research assistant at University of Texas at Austin   Aug 2023 - Present
Advised by Dr. Scott Myers

I am working on the acoustic analysis of Luganda H-tone syllables, to find the f0 timing and its relationship with the
syllable structure.

Research Assistant at Speech Acquisition and Intelligent Technology Lab (SAIT)   Aug 2020 - Jun 2023
Dr. Zhang's lab studies the speech acquisition of second-language learners and hearing-impaired children. I
mainly worked on the human perception of second-language speech.
-- Responsibilities include conducting perception experiments, speech data annotation, processing, and
management.

Research Assistant at the Department of Language and Literature of Ethnic Minorities   Jun 2021 - Sep 2021
of China
Prof. Bao's department focuses on Mongolian phonetics and phonology.
-- Responsibilities include data analysis, dialect speech recording, and academic paper writing.

Funded Project: A Phonological Study on Chinese Loanwords in Mongolian   Sep 2018 - Jun 2019
[Undergrad University]
Student project funded by ECNU undergraduate research funding
-- Corpus analysis on Mongolian Loanword, completed by myself.

Publications and Presentations

- **Nuchged, Baorian**, Christian Stilp, Keith Kluender, and Fernando Llanos. "Cochlea-Scaled Entropy Predicts Robust Neural Coding of Speech Envelopes." *Seventeenth Annual Meeting of the Society for the Neurobiology of Language (SNL)*, 12–14 Sept. 2025, Gallaudet University, Washington, D.C. Poster.
- **Nuchged, Baorian**, and Rajka Smiljanic. "Protective face masks affect clearly produced diphthongs by L1 and L2 English talkers." *The Journal of the Acoustical Society of America* 155.3_Supplement (2024): A315-A315.
- **Rian Bao**, Linkai Peng, Yuchen Yan, Jinsong Zhang. "An Exploratory Study for Quantifying the Contextual Information for Successful Chinese L2 Speech Comprehension." *The 13th International Symposium on Chinese Spoken Language Processing (ISCSLP)*, 2022. DOI: 10.1109/ISCSLP57327.2022.10038037
- Gao,Yingming, **Nuchged Baorian**, Li, Ya, and Peng, Linkai. "An Investigation of Applying Large Language Models to Spoken Language Learning*." Applied Sciences* 14.1 (2023): 224. DOI: https://doi.org/10.3390/app14010224
- **Rian Bao**, Linkai Peng, Yingming Gao, Jinsong Zhang. "The Contribution of Phonological and Fluency Factors to Chinese L2 Comprehensibility Ratings: A Case Study of Urdu-speaking Learners." The 13th *International Symposium on Chinese Spoken Language Processing (ISCSLP)*, 2022. DOI: 10.1109/ISCSLP57327.2022.10038233

HONORS & AWARDS

Graduate Student Fellowship at University of Texas at Austin	Aug 2023
Outstanding Master's Thesis Award of Beijing Language and Culture University	Jun 2023
Merit Student of Beijing Language and Culture University	Dec 2021
Best Student Paper Award in Phonetics Conference of China	Jul 2021
The Second Prize scholarship	Sep 2020, Sep 2021 and Sep 2022
Outstanding Bachelor's Thesis Award of East China Normal University	Jul 2019

Thesis: A Phonological Study on Chinese Loanwords in Mongolian (Outstanding Graduation Thesis Award)

WORK EXPERIENCE

Nio	Feb 2023 - May 2023
Data Specialist (Intern)	
Organizing and analyzing the wakeup speech and text data of the voice assistant Nomi. I gained experience in data management from this internship.	Beijing
ByteDance (Tiktok)	Mar 2022 - Jul 2022
English Text-to-Speech Linguistic program manager (Intern)	Beijing
Led the design and implementation of highly human-like Text-to-Speech (TTS) projects Ava and Henry (click to download demo).	

Project link:
https://www.volcengine.com/docs/6561/97465#%E5%A4%9A%E8%AF%AD%E7%A7%8D
Examining virtual sounds to make them perceptually indistinguishable from real human speech based on user feedback.

DataBaker	Oct 2021 - Dec 2021
Speech Data Annotator (Intern)	Beijing

SKILLS LIST

Programming Languages: Python scripting (Fluent), Praat scripting (Fluent), R scripting for statistical analysis, Matlab scripting, knowledge of the Linux operating system
Data Analysis: R (ggplot2, lm, lme4, olsrr)
Experimental Design: Finding Five, Gorilla
Writing and Communication: Microsoft Office, PowerPoint, Excel, LaTex
Languages: Mongolian (native), Chinese Mandarin (native), English (fluent), Spanish (entry-level)