

Rimita Lahiri

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Education

- Aug 2018 **PhD, Electrical and Computer Engineering**, *University of Southern California (USC)*,
–Present Los Angeles, CA.
advisor: Shrikanth Narayanan
gpa: 3.70/4.0
- Aug 2014 **Master of Engineering, Electronics and Telecommunication Engineering**, *Jadavpur*
–May 2016 *University*, India.
advisor: Amit Konar
gpa: 9.93/10.00
- Jul 2010–May 2014 **Bachelor of Technology, Electronics and Communication**, *Heritage Institute of Tech-*
2014 *nology*, India.
gpa: 8.92/10.00

Experience

- Aug 2018 **Research Assistant**, *University of Southern California*, Los Angeles, USA.
–Present
- **Leading research and collaboration of CARE group at SAIL with 7 PhD students**
 - **Developing novel algorithms in speech and language processing and machine learning, with applications related to ASD. Other works include multimedia content analysis.**
 - Developing contextual measures for conversational modeling and understanding
 - Developed measures for quantifying interpersonal synchrony in child-adult dyadic interactions
 - Developed a robust child-adult classification method in dyadic interactions using adversarial learning
 - Developed a robust voice activity detection tool as a part of the pipeline designed by the USC-SAIL team for DIHARD Challenge 2
 - Mentored in exploreCSR outreach workshop
 - Mentored 2 undergrad students
 - Significantly contributing to grant proposals
- May 2023 **Applied Scientist Research Intern**, *Amazon Science*, Santa Clara, California USA.
–August 2023
- Summer research intern in AWS Transcribe Research group
 - Developed framework for overlapped multi-talker ASR and analyzed the impact of leveraging speaker embedding for the same
- May 2022 **Applied NLU Research Intern**, *Meta Reality Labs*, Burlingame, California USA.
–August 2022
- Summer research intern in Natural Language Generation Research group
 - Developed and analyzed the impact of adding synthetically generated data on the performance of intent/slot filling models using state of the art paraphrasing frameworks
- May 2021 **Summer Research Intern**, *Microsoft Research*, Washington, USA.
–August 2021
- Summer research intern in Cognitive Services Research group
 - Developed multi-lingual ASR framework with enhanced performance report link
- August 2020 **Teaching Assistant**, *University of Southern California*, Los Angeles, USA.
–December 2020
- Teaching assistant for the undergraduate course: Introduction to Probability and Statistics for Electrical engineering and Computer Science

- August 2016 **Researcher**, *TCS Innovation Labs*, Kolkata, India.
- July 2018
- Developed novel solutions for robotic localization and mapping problem as a member of TCS Kolkata Research Lab, Robotics section.
 - Co-developed and deployed a distributed SLAM algorithm (GMapping) as a ROS node and validated its potential in terms of reliability and latency with suitable experiments.
 - Developed a robotic system using Raspberry Pi board, camera and IMU sensor for performing ORBSLAM onboard.
- May 2014 **Graduate Research Assistant**, *Jadavpur University*, Kolkata, India.
- May 2016
- Worked under Prof. Amit Konar on 'Brain localization and feature extraction using computational intelligence techniques'
 - Developed a Self Adaptive variant of Firefly Algorithm and applied for selection of EEG channels and features to improve BCI performance
 - Developed an improvised Regularised CSP algorithm for application in BCI

Research Interests

Machine Learning and Statistics	Deep Learning, Adversarial Learning, Time Series Analysis, Classification and Clustering applications
Speech and Language	Conversational Dynamics of Vocal Patterns, Representation Learning for speech and language, Voice Activity Detection
Behavioral Signal Processing	Multimodal Analysis and Interpretation with applications in clinical domain(e.g.ASD), Behavioral Coordination

Selected Coursework

graduate courses	Pattern Recognition, Applied Natural Language Processing, Random Process, Analysis of Algorithms, Affective Computing, Machine Learning, Multimodal Probabilistic Learning of Human Communication
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Selected Course Projects

Affective Computing	Art meets Affect report
Applied NLP	Abstract Movie Summarization report
Pattern Recognition	Classification of APS and DOTA2 using Different Classifiers: A Comparative study report

Technical Experience

Proficient With

languages	Python, MATLAB, bash
technologies	TensorFlow, Kaldi, OpenSMILE, Pytorch, Git, High-Performance Computing Cluster

Have Experience With

languages	C, C++, C#, HTML, SQL, ROS
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Honors and Achievements

Fellowships	Awarded USC HCN pre-doctoral fellowship Awarded GATE scholarship from AICTE
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Awarded scholarship under the Central Sector Scheme of Scholarship for College and University Students for higher secondary performance

Awarded scholarship from Ernst and Youngs Foundation in 2008 for performance in secondary studies

Offered PhD Fellowship by NTU, NUS, Vanderbilt University

Awards Presented research work at USC Annenberg Graduate Fellowship Research and Creative Project Symposium for consecutive years

Honoured with Gold Medals as the department and University topper in Masters of Engineering 2016, by Jadavpur University

Won the Best Student award for overall academic performance in secondary level

Activities

2018 **Balaka (Bengali Association of USC)**, USC, Los Angeles, CA.
–Present Committee member of the university cultural, linguistic and ethnic club.

2018 **Vidushak (Improv Comedy Group of USC)**, USC, Los Angeles, CA.
–Present Performed in multiple improv shows, involved in script writing, screenplay and casting as well.

Selected Publications**

- [1] R. Lahiri, T. Feng, R. Hebbar, C. Lord, S. H. Kim, and S. Narayanan, "Robust self supervised speech embeddings for child-adult classification in interactions involving children with autism," *arXiv preprint arXiv:2307.16398*, 2023.
- [2] R. Lahiri, M. Nasir, C. Lord, S. H. Kim, and S. Narayanan, "A context-aware computational approach for measuring vocal entrainment in dyadic conversations," in *ICASSP 2023 - 2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 1–5, 2023.
- [3] R. Lahiri, M. Nasir, M. Kumar, S. H. Kim, S. Bishop, C. Lord, and S. Narayanan, "Interpersonal synchrony across vocal and lexical modalities in interactions involving children with autism spectrum disorder," *JASA Express Letters*, vol. 2, no. 9, p. 095202, 2022.
- [4] R. Lahiri, M. Kumar, S. Bishop, and S. Narayanan, "Learning domain invariant representations for child-adult classification from speech," in *ICASSP 2020 - 2020 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 6749–6753, 2020.
- [5] T. J. Park, M. Kumar, N. Flemotomos, M. Pal, R. Peri, R. Lahiri, P. G. Georgiou, and S. Narayanan, "The second dihard challenge: System description for usc-sail team.," in *INTERSPEECH*, pp. 998–1002, 2019.
- [6] R. Lahiri, P. Rakshit, and A. Konar, "Evolutionary perspective for optimal selection of eeg electrodes and features," *Biomedical Signal Processing and Control*, vol. 36, pp. 113–137, 2017.
- [7] R. Lahiri, K. Kumatani, E. Sun, and Y. Qian, "Multilingual speech recognition using knowledge transfer across learning processes," 2021.
- [8] Y.-K. Kim, R. Lahiri, M. Nasir, S. H. Kim, S. Bishop, C. Lord, and S. Narayanan, "Analyzing short term dynamic speech features for understanding behavioral traits of children with autism spectrum disorder," *Proc. Interspeech 2021*, pp. 2916–2920, 2021.

**** The full list of publications is available [here](#)**