Sreyan Ghosh

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- LinkedIn
- GitHub
- Google Scholar
- Portfolio

EDUCATION

Bachelor of Technology in Computer Science, Christ University, GPA: 8.69/10.00   **April 2016 — April 2020**

Master's in Computer Science, University of Maryland, College Park, GPA: -/-   **August 2022 — August 2024 (Expected)**

PROFESSIONAL EXPERIENCE

Deep Learning Solutions Architect (Speech and Language Processing)   **April 2022 — August 2022**
Nvidia   Bangalore, India

- Working as a senior solutions architect in the professional services team at Nvidia. Responsible for delivering deep-learning based NLP solutions to Nvidia's premier customers around the globe.
- Contributing to AI R&D at Nvidia.

Software Engineer II   **August 2020 — March 2022**
Cisco Systems   Bangalore, India

- Working as a senior software engineer in the automation and orchestration team under the Customer Experience BU. Building network assurance solutions for Cisco's telecom customers, leveraging state-of-the-art algorithms for anomaly detection at scale. Built a critical component in Cisco's first telemetry-based network assurance solution.
- Currently leading the development of an AI-based network security system for one of Cisco's telecom customers.
- Was part of the AI team that developed Cisco first contact center solution, leveraging state-of-the-art NLP algorithms.
- Contributing to AI R&D at Cisco by representing Cisco at various conferences.

RESEARCH EXPERIENCE

Project Associate (Research) [Link]   **June 2021 — Present**
Speech Lab, Department of Electrical Engineering, Indian Institute of Technology Madras   Chennai, India

- Working under the supervision of **Dr. S. Umesh** in the area of self-supervised learning for Speech and Audio processing. Exploring techniques to devise lighter-weight models and efficient algorithms to make supervised and self-supervised learning in speech and audio amenable to resource-constrained scenarios (both data and compute). Paper accepted to **SAS Workshop at AAAI 2022** and **Interspeech 2022**.

Research Assistant (part-time) [Link]   **December 2019 — Present**
MIDAS Labs, IIIT-Delhi   Delhi, India

- Working under the supervision of **Dr. Rajiv Ratn Shah** in the areas of Speech and Natural Language Processing. Worked on building ASR systems for low-resource Indian Languages (mono and multi-lingual) and Indian Accented English which served as a critical component for other systems built by the lab. Worked in the field of content moderation in modalities of both speech and text. Currently exploring multi-modal techniques for identifying disfluencies in spoken utterances. Published papers at **AAAI 2021**, **ACL 2021** and **Interspeech 2022**.

Research Assistant & Teaching Assistant   **December 2018 — December 2019**
Christ University   Bangalore, India

- Worked under the supervision of **Dr. Samiksha Shukla** and **Dr. Aynur Unal** on detecting Bipolar Disorder in individuals from clinical records. Used multi-variate time-series modelling to capture the sequential aspect of medical records recorded on weekly intervals. Worked was done in collaboration with Stanford University. Paper accepted to Springer Singapore. Also presented our work at Yale Global Health Innovation Conference.
- Worked under **Prof. Julian Benedict** on a project based on AI based pre-fetching for web caching.
- Taught students basic to advanced concepts in AI, including conducting practical workshops and basics of DSA.

INTERNSHIPS

Google Summer of Code   **April 2022 — Present**
Tensorflow, Google   Remote

- Working on building deep learning based NLP (speech and text) notebooks using Tensorflow and Keras.

Research Intern   **January 2020 — June 2020**
MIDAS Labs, IIIT-Delhi   Delhi, India

- Worked on a project, End-to-End Named Entity Recognition from English Speech under the guidance of **Dr. Rajiv Ratn Shah** as part of my bachelors thesis. Paper accepted at **Interspeech 2020**.

Technology Intern   January 2020 — June 2020
Cisco Systems   Bangalore, India

• Worked on building a VOIP (Voice Over IP) Traffic Analyzer to detect anomalous SIP messages using machine learning.

Data Science Intern   December 2019 — January 2020
Noodle.ai   Bangalore, India

• Worked on multivariate time-series anomaly detection in high-frequency IoT sensor data obtained from steel manufacturing machines.

Data Science Intern   April 2019 — May 2019
TEG Analytics   Bangalore, India

• Worked under the healthcare intelligence division to provide insights from insurance plan enrollment data, for private insurance companies in the US.
• Used Machine Learning and Deep Learning techniques to predict plan enrollment for insurance companies.

PROJECTS (APPLIED)

Automatic Speech Recognition for Indian Languages   July 2020 — Present
• Used state-of-the-art neural networks and self-supervised algorithms to create a multi-lingual ASR system that has sub 10% WER on 7 Indian languages.
• Used a combination of adverserial learning and transfer learning to reach state-of-the-art WER on an ASR system for Indian accented English.
• Implemented several reaserch papers together with developing new algorithms during the course of this project.
• Served ASR systems for real-time and offline speech transcription.
• Part of this work was done at MIDAS@IIIT-D. I am currently continuing building ASR for Indian languages under the National Mission at Speech Lab IIT-Madras.

Intelligent Minutes of the Meeting   July 2020 — August 2020
• Used Automatic Speech Recognition and Speaker Diarization together with transformer-based text summarization and Named-Entity-Recognition to create a web app for intelligent Minutes of the Meetings.
• Application has capabilities to take meeting recordings and output summary, diarized transcripts, and key points from the meeting, including dated items and to-dos.

SpeeQL   June 2020 — July 2020
• Used Automatic Speech Recognition, NER, and Image Classification together with OCR to build a smart in-store touch-free shopping assistant for brick and mortar stores.
• Project was one of the first to use speech as a medium of interaction. Was later adopted by P&G to deploy on scale.

User fatigue prediction using deep learning   July 2019 — August 2019
• Building End-to-End systems using object detection and image classification techniques to detect levels of fatigue in different parts of the face.
• Build a novel dataset for the same. The application was able to give a user suggestions based on his total level of fatigue calculated using weighted average of fatigue from all parts of the face.

SKILLS

Programming	Python, Java, C, MySQL, HTML, CSS
Frameworks	PyTorch, Keras, Tensorflow, Django, Flask, Spark
Tools	GIT, Android, Tableau, Power BI, AWS, GCP, Rest API, Docker, K8s
Concepts	Speech and Natural Language Processing, Software Development, Functional programming, Object- oriented programming, Machine Learning, Deep Learning, Image Processing, Cloud Computing

PUBLICATIONS (ACCEPTED & PENDING) AND PATENTS

1. **Ghosh, S.**, Seth, A. & Umesh, S. DeLoRes: Decorrelating Latent Spaces for Low-Resource Audio Representation Learning. **Link**. *SAS Workshop at AAAI 2022, Extended paper submitted to IEEE JSTSP Special Issue on Self-Supervised Learning for Speech and Audio Processing.*

2. **Ghosh**, S. & Kumar, S. Cisco at SemEval-2021 Task 5: What's Toxic?: Leveraging Transformers for Multiple Toxic Span Extraction from Online Comments. **Link**. *SemEval-2021 at ACL 2021.*

3. **Ghosh, S.** *et al.* Cisco at AAAI-CAD21 shared task: Predicting Emphasis in Presentation Slides using Contextualized Embeddings. **Link**. *CAD-21 at AAAI 2021.*

4. Yadav, H., **Ghosh, S.**, Yu, Y. & Shah, R. R. End-to-end Named Entity Recognition from English Speech. **Link**. *Interspeech 2020.*

5. **Ghosh**, **S.**, Lepcha, S., Sakshi, S. & Shah, R. R. DeToxy: A Large-Scale Multimodal Dataset for Toxicity Classification in Spoken Utterances. **Link**. *Interspeech 2022.*

6. **Ghosh**, **S.**, Seth, A., Katta, S. V. & Umesh, S. Deep Clustering for learning general-purpose Audio Representations. **Link**.

7. **Ghosh**, **S.**, Srivastava, H. & Umesh, S. MMER: Multimodal Multi-task learning for Emotion Recognition in Spoken Utterances. **Link**.

8. **Ghosh**, **S.**, Srivastava, H. & Umesh, S. A Discourse Aware Sequence Learning Approach for Emotion Recognition in Conversations. **Link**.

9. **Ghosh**, **S.**, Seth, A. & Umesh, S. Span Classification with Structured Information for Disfluency Detection in Spoken Utterances. **Link**. *Interspeech 2022.*

10. Prasad, L. V. S. V. D., **Ghosh**, **S.** & Umesh, S. PADA: Pruning Assisted Domain Adaptation for Self-Supervised Speech Representations. **Link**.

11. Prasad, L. V. S. V. D., Seth, A., **Ghosh**, **S.** & Umesh, S. Analyzing the factors affecting usefulness of Self-Supervised Pre-trained Representations for Speech Recognition . **Link**.

12. Prasad, L. V. S. V. D., **Ghosh**, **S.** & Umesh, S. CCC-WAV2VEC 2.0: CLUSTERING AIDED CROSS CONTRASTIVE SELF-SUPERVISED LEARNING OF SPEECH REPRESENTATIONS.

13. **Ghosh**, **S.**, Sunny, S. J. & Roney, R. Accident Detection Using Convolutional Neural Networks. Link. *IconDSC* (2019).

14. **Ghosh**, **S.**, Sakshi & Kataria, V. Multivariate Time-series Unsupervised Anomaly Detection in 5G networks. Defensive Publication. *Under US Patenting with Cisco* (2020).

Awards & Honors

2020 Recognised by Cisco CX CTO and higher management on multiple occasions for my research and innovation initiatives.
2020 Awarded the **Graham Bell Award** for being one of the most competitive undergraduates to have graduated in the year 2020
2020 Winner of Cisco Collab Hacks
2020 Winner of P&G Global Innovation Challenge
2019 Appeared on the cover page of Analytics India Magazine twice for winning national level hackathons (**TEG Analytics and Uber Hackathon**)
2019 Winner of Hindustan Unilever BFS Technology Hackathon
2018-20 Winner of various inter-college and intra-college hackathons sponsored by MNCs and the Government (Including a bronze medal at Kaggle)

Responsibilities

2019-20 Served as the Secretary of Computer Science Department, Christ University
2018-20 Co-founded Neuron, Christ Universitys' first AI club focused on research, served as the first Vice President of the club

Community Service

2021 Reviewer at Electronic Letters (IET)
2021 Reviewer at ACL 2021
2021 Reviewer at HASOC 2021
2021 Lecturer of SLP at University of Buffalo, New York.

Co-Curricular and Hobbies

2015 State-Level Table Tennis Champion (West Bengal, India)
Present Active investor and trader in the stock markets. In-depth knowledge of fundamental and technical analysis of stocks.
Present Nature Photography