

Debapriya Tula

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EDUCATION

Indian Institute of Information Technology, Sri City, Andhra Pradesh
Bachelor of Technology in Computer Science and Engineering

2017 - 2021
GPA: 9.35/10.0

WORK EXPERIENCE

Google Research, India

Aug 2022 - Present

Pre-Doctoral Researcher

Advisors: Dr. Gaurav Aggarwal & Dr. Sujoy Paul

- Worked on improving test-time adaptation of OCR models for a writer's handwriting.
 - Adaptation with a **single** handwriting image.
 - Improved character error rate by **7-8 %**.
- Working on improving understanding of images containing text.

Tata Consultancy Services - Innovation Lab, India

Aug 2021 - July 2022

Machine Learning Engineer

- Develop ML/DL models to & predict user behavior for services related to General Electric's Healthcare segment.
- Build and deploy ML models using AutoML toolkits for big datasets (10-20 GB), with modules for statistical data analysis and output explainability.

LimeChat, India

Jan 2021 - June 2021

NLP Software Development Intern

- Redesigned the **order tracking** system to make it more seamless and fault-tolerant.
- Redesigned LimeChat's **FAQ management** and **Utterance management** systems and deployed them as core features in **5 weeks**.
- Set up the chatbot for **Nissan**, LimeChat's biggest client undertaking hitherto.

IIT Delhi, India

May 2020 - July 2020

Computer Vision Research Intern

- Designed an efficient pipeline for the problem of motion segmentation of fish in **underwater scenarios** solved as an **unsupervised** learning task.
- Replicated a few research papers in the course of exploring the transferability of other models to the problem.

Tezpur University, India

May 2019 - June 2019

Research Intern

- Maximize stacking regions to find the most stable secondary structure(s) of RNA using concepts from graph theory.
- Awarded the **best paper** at **ICCCIOT, 2020**.

PUBLICATIONS

Preprints

- **Is it an i or an l: Test-time Adaptation of Text Line Recognition Models.**
Debapriya Tula, Sujoy Paul, Gagan Madan, Peter Garst, Reeve Ingle, Gaurav Aggarwal.
Under review, 2023
- **Target Aware Network Architecture Search and Compression for Efficient Knowledge Transfer.**
Shabbeer Basha, Debapriya Tula, Sravan Kumar Vinakota, Shiv Ram Dubey.
Under review, 2023.

Published

- **Ensemble of Multilingual Language Models with Pseudo Labeling for offence Detection in Dravidian Languages.**
Debapriya Tula, Prathyush Potluri, Shreyas Ms, Sumanth Doddapaneni, Pranjal Sahu, Rohan Sukumaran, Parth Patwa.
European Association for Computational Linguistics (EACL), 2021
DravidianLangTech workshop, 2021.
- **Estimating RNA Secondary Structure by Maximizing Stacking Regions..**
Piyali Sen, Debapriya Tula, S.K. Ray, S.S. Satapathy
International Conference on Computer Communication and Internet of Things (ICCCIOT), 2021
🏆 **Best Paper Award.**

- **Offense Detection in Dravidian Languages using Code-Mixing Index based Focal Loss and Cosine Normalization.**
Debapriya Tula, Shreyas Ms, Viswanatha Reddy, Pranjal Sahu, Sumanth Doddapaneni, Prathyush Potluri, Rohan Sukumaran and Parth Patwa.
Springer Nature Computer Science, 2022 (Journal).
- **Incorporation of transition to transversion ratio and nonsense mutations, improves the estimation of the number of synonymous and non-synonymous sites in codons.**
Suvendra K Ray, Ruksana Aziz, Piyali Sen, Pratyush Kumar Beura, Saurav Das, Debapriya Tula, Madhusmita Dash, Nima Dondu Namsa, Ramesh Chandra Deka, Edward J Feil, Siddhartha Sankar Satapathy.
DNA Research, 2022 (Journal).

PROJECTS

- **Content-Based Image Retrieval** *Oct 2020 - May 2021*
 - Developed a multi-loss model for retrieving relevant images from large datasets.
 - Optimized the model using self-attention and an angular-based loss for a **curriculum-based sampling**.
- **Speech Emotion Recognition** *Sep 2020 - Dec 2021*
 - Applied augmentation to speech signals, extracted MFCC features and trained a Random Forest Classifier for identifying emotion from speech directly.
 - Accuracy obtained on datasets: **RAVDESS: 73.5 % & TESS: 98.6 %**.
- **Solingo** *Feb 2020 - Apr 2020*
 - An app that recognises handwritten math expressions from captured images.
 - Implemented an attention-based model for expression recognition, including LaTeX transformation of the input, using **Pytorch** and **Selenium**.
 - Accuracy on **CROHME** dataset: **73 %**.
- **Speech Dereverberation** *Sep 2018 - Dec 2018*
 - Led a team of 4 to build a system to remove reverb(echo) from sound signals by predicting the reverb's contribution in the present signal, using NumPy and audioread.
 - Similarity with original signal: **65 - 75 %**.

AWARDS AND HONORS

- **Best Paper Award** at **ICCCIoT**, 2020.
- **INSPIRE** Award for my science project in 2013.
- **State rank 11** in **NSTSE** exam in 2012.

TALKS

- **Deep Learning - Then, Now and Beyond** *Apr 2023*
 - Central University of Odisha, India

PROFESSIONAL RESPONSIBILITIES

- **AI Student Ambassador** - Intel *Oct 2019 - June 2021*
 - Organize hands-on sessions and paper reading sessions on topics related to AI/ML. Encourage students to work on AI/ML projects and assist them.
 - Designed an interpolation method that reduces the frame rate in videos followed by frame reconstruction for efficient (internet) data usage. Average interpolation error on **Visual Tracker Benchmark(VTB)** dataset - **12.6 %**.
- **Undergraduate Teaching Assistantship** - Computer Science and Engineering, IIIT Sri City
 - Advanced Data Structures and Algorithms - *Prof. Shiv Ram Dubey* *Fall 2019*
 - Data Structures and Algorithms - *Prof. Prerana Mukherjee* *Spring 2020*

SKILLS AND TOOLS

Deep Learning, **Computer Vision**, Natural Language Processing, Data Science, **Python**, **MATLAB**, Javascript, **Git**, **SQL**, **NoSQL**, **Bash**, **Rasa**, **Tensorflow**, **Pytorch**, **Keras**, **JAX**, **FastAI**, **Sklearn**, **Numpy**, **Pandas**, **Seaborn**, **LaTeX**

OTHER DETAILS

- **Language Proficiency:** English, Hindi, Odia, Assamese.
- **Hobbies:** Reading books, playing the guitar, singing, playing table tennis and badminton.