

Ashwin Sankar

Project Associate | AI4Bharat

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Publications

[C]=Conference

- [C.2] **Rasa : Building Expressive Speech Synthesis Systems for Indian Languages in Low resource Settings**
Praveen S V, [Ashwin Sankar](#), Giri Raju, Mitesh M. Khapra
Under Review [Under Review]
- [C.1] **Comparative Study of Transformer Models**
[Ashwin Sankar](#), R. Dhanalakshmi
Proceedings of the 2022 Australasian Database Conference. [ADC2022]



Education

Sep 2018 May 2022	KCG College of Technology Anna University <i>B.E. Computer Science and Engineering Advisor : Dr. R Dhanalakshmi</i> <i>Project : Comparative Study of Transformer models for Question Answering Tasks</i> <i>Selected Coursework : Calculus, Data Structures, Algorithms Analysis, Artificial Intelligence, Deep Learning, Reinforcement Learning, Linear Algebra, Probability Theory.</i>	Chennai, India
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Experience

Dec 2022 Present	AI4Bharat, IIT Madras <i>Project Associate Advisor : Mitesh M. Khapra</i> Established first-of-its-kind, SOTA expressive TTS recipe for Indic Languages (Tamil). Building an Indic language Expressive Text-to-Speech (TTS) dataset under the mentorship of Prof. Mitesh M. Khapra, actively contributing to a repository with 25,000+ annotated audio samples in over 20 languages . Improved the expression transfer in TTS, resulting in a substantial increase in the MUSHRA score from 42.76 to 57.26 across varying resource levels, elucidated in a research paper submitted to AAAI-24 . Reduced experiments' Turn-Around-Time by at least 8x with multi-GPU adaptations of existing models.	Chennai, India
Jul 2022 April 2021	Saama Technologies Pvt. Ltd. <i>Intern Hosts : Malaikannan Sankarasubbu, Pravin Kumar</i> Transformed intricate clinical data into insightful visualizations using machine learning, guiding informed product development decisions. Designed a response model verification system, enhancing API quality, and reducing testing time by 3x . Played a key role in designing and implementing a Rule-Test Harness for clinical data coding, boosting accuracy and consistency by over 30% . Spearheaded the creation of a Smart Pricing Calculator, enabling the sales team to produce accurate pricing quotes 200% faster, streamlining sales and improving customer satisfaction.	Chennai, India

Projects

- TTS Data Pipeline**  2023 - present
Advisors : [Dr. Mitesh M. Khapra](#)
- > Developing a YouTube data scraping pipeline.
 - > Addresses the lack of quality TTS dataset, for low-resource Indic languages
 - > Uses SOTA approaches to removing noise, transcription and speech separation.
 - > Refines into TTS quality dataset with subsequent post-processing steps using a message broker as an intermediary.
- Roar : A conversational Toolkit for Indian Languages**  2023 - present
Advisors : [Dr. Mitesh M. Khapra](#)
- > Built over Nvidia/NeMo's conversational AI toolkit for Indic languages.
 - > Building the SOTA architectures for TTS and adopting novel techniques like Flash Attention.
 - > Expect release of expressive TTS models for Indic languages towards the end of 2023.

Neural Networks from Scratch [🔗]

2022 - 2023

Advisors : [Dr. Mitesh M. Khapra](#)

- Developed neural networks using NumPy without relying on existing frameworks.
- Constructed various gradient descent optimizers like SGD, NAG, ADAM, and NADAM from scratch.
- Created an automatic backward propagation method to replicate PyTorch's backward pass.

DeepRL : A paper to code effort of Q-learning algorithms [🔗]

2022 - 2022

Advisors : -

- Implemented paper to code of DQN, DuDQN, DDQN and DuDDQN algorithms.
- Replicated published Atari-360 benchmarks on a smaller subset.
- Evaluated new techniques for improving the performance of experience replay.

Leadership & Activities

Paper Reading Group : Speech Synthesis Team

2023 - Present

Position : Host | Facilitators : [Dr. Mitesh M. Khapra](#), [Praveen S V](#)

- Led exploration into various speech synthesis and voice cloning domains, covering Expression Transfer, Multi-speaker, Multi-lingual, and Low-Resource aspects.
- Organize and lead presentations covering a at least one paper per person each week.
- Engage in thorough discussions to analyze our experiments, dissecting their strengths and weaknesses.

CS1100 : Introduction to Programming, IIT Madras [🔗]

2023

Position : Teaching Assistant | Facilitators : [Dr. Mitesh M. Khapra](#)

- Assisted a cohort of 6 students.
- Improved their logical thinking and programming skills.
- Enhanced their problem-solving skills and the understanding of fundamentals of C.

Programming Club, KCG College of Technology

2019 - 2023

Position : Student Lead | Facilitators : [Dorai Thodla](#), [Shiny S U](#), [Dr. Minu Susan Jacob](#)

- Supervised a group of over 15 students within the club.
- Taught Data visualization, web-scraping and web frameworks like Flask, FastAPI.
- Elevated their problem-solving abilities and comprehension of Python fundamentals.

GE8151 : Problem Solving and Python Programming, KCG College of Technology

2018

Position : Teaching Assistant | Facilitators : [Dr. Anand R](#)

- Assisted over 40 diverse students in mastering Python programming while honing problem-solving skills.
- Customized learning methods for diverse learning styles and promoted collaborative learning.
- Introduced advanced Python concepts, aiding in algorithmic thinking and application development.

Awards & Honors

Computer Society of India Kancheepuram Chapter	National Level Coding Contest, Winner <i>Triumphed in a nation-level Python challenge by swiftly solving a set of three problems.</i>	2021
Smart India Hackathon Software Edition	National Level Software Competition, Finalist <i>Competed with university students across India and got special appreciation as the most innovative problem solver in the category.</i>	2019
Dean's award for the most ingenious idea	Ideathon Challenge, Winner <i>Secured victory within the college with the 'Automatic Toll Collection using Internet Technology' concept.</i>	2019
Dean's award for the fastest implementation	Twitter Trends Analysis Challenge, Winner <i>Achieved first place within the KCG Programming Club by delivering the quickest implementation of the 'Twitter Trends Analysis Challenge'.</i>	2019

References

Mitesh M. Khapra

Associate Professor, Department of CSE, IIT Madras [📧]

Krishnamurthy M

Professor & Head, AI & DS, KCG College of Technology [📧]

Cloudin S

Professor & Head, Department of CSE, KCG College of Technology [📧]