

# Ashwin Sankar

## Project Associate | AI4Bharat

in [linkedin.com/in/ashwin-s2000](https://www.linkedin.com/in/ashwin-s2000)  [github.com/iamunr4v31](https://github.com/iamunr4v31)  +91 638 149 9578  [ashwins1211@gmail.com](mailto:ashwins1211@gmail.com)

## Publications

[C]=Conference

- [C.3] **Enhancing Out-of-Vocabulary Performance of Indian TTS Systems for Practical Applications through Low-Effort Data Strategies**  
Srija Anand, Praveen S V, [Ashwin Sankar](#), Giri Raju, Mitesh M. Khapra  
<https://arxiv.org/pdf/2407.13435> [InterSpeech'24]
- [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  
<https://arxiv.org/pdf/2407.14056> [InterSpeech'24]
- [C.1] **Comparative Study of Transformer Models**  
[Ashwin Sankar](#), R. Dhanalakshmi  
*Proceedings of the 2022 Australasian Database Conference.* [ADC2022]



## Education

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

## Experience

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

## Projects

- 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.

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

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### 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

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

## References

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### 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 ..... [📧]