Nicy Scaria

(+91) 8281448603
nicyscaria@iisc.ac.in
https://nicyscaria.github.io/

Research interests

I am broadly interested in natural language processing, large language models, knowledge representation, and cognitive neuroscience. My research focuses on developing intelligent agents that combine domain reasoning with adaptive learning capabilities. Drawing from cognitive science principles, I build AI systems that understand subject-specific concepts and personalize their interactions through automated assessment and feedback, adapting to each student's learning journey.

Education

Computational and Data Sciences, Indian Institute of Science — Bangalore, India
Ph.D. in Computational and Data Science (GPA: 9.10/10) — Aug'22 - Present
Advisor: Dr. Deepak Subramani
Research: *Intelligent Systems for Personalized and Adaptive Learning, Reasoning, Assessments and Evaluation*

Electrical Engineering, College of Engineering Trivandrum — Kerala, India
M.Tech. in Control Systems (GPA: 9.44/10) — Aug'17 - June'19
Advisor: Dr. Lal Priya P S
Research: *Lateral Control of an Autonomous Vehicle*

Electrical Engineering, SCMS School of Engineering and Technology — Kerala, India
B.Tech. in Electrical and Electronics Engineering (GPA: 8.41/10) — Aug'12 - July'16

Selected Publications

1. **Scaria, N.**, Kennedy, S.J.J. and Subramani, D. Can Small Language Models Learn, Unlearn, and Retain Noise Patterns?. *arXiv preprint arXiv:2407.00996*, 2024. (paper)(code)
2. **Scaria, N.**, Kennedy, S.J.J., Latinovich, T. and Subramani, D. EvalYaks: Instruction Tuning Datasets and LoRA Fine-tuned Models for Automated Scoring of CEFR B2 Speaking Assessment Transcripts. *arXiv preprint arXiv:2408.12226*, 2024. (paper)(code)
3. **Scaria, N.**, Dharani Chenna, S., Subramani, D. (2024). Automated Educational Question Generation at Different Bloom's Skill Levels Using Large Language Models: Strategies and Evaluation. *International Conference on Artificial Intelligence in Education*, 2024 Jul 2 (pp. 165-179). (paper)(code)
4. **Scaria, N.**, Chenna, S., Subramani, D. How Good are Modern LLMs in Generating Relevant and High-Quality Questions at Different Bloom's Skill Levels for Indian High School Social Science Curriculum?. *In Proceedings of the 19th Workshop on Innovative Use of NLP for Building Educational Applications (BEA 2024)*, pages 1–10, Mexico City, Mexico. Association for Computational Linguistics. (paper)(code)

Ongoing Research

1. AuroBench Physics: A Benchmark for Assessing Physics Reasoning in Small Language Models
2. Identifying Student Learning Gaps and Misconceptions in High School Physics Through Strategic Multiple Choice Question and Distractor Design

Professional Experience

Research Intern | Talking Yak English Learning Pvt Ltd, Bangalore, IN — Aug'23 - Present
Themes: Intelligent Learning Systems, Dialogue Systems, LLM Finetuning, Synthetic Data Generation

Project Scientist | Indian Institute of Science, Bangalore, IN — May'21 - July'22
Themes: AI Education, Interactive Simulations, Educational Technology

Fellow | Teach for India, Chennai, IN — June'19 - April'21
Themes: Teaching, Data-driven Interventions in Classroom, Learning Engineering

Student Leadership Intern | Teach for India, Chennai, IN — May'20 - June'20
Themes: Social, Emotional, and Ethical Learning, 21st Century Skills

Data and Research Intern | Young India Foundation, Delhi, IN — Dec'19 - Mar'20
Themes: 21st Century Skills Frameworks

Research Intern | Tata Elxsi, Trivandrum, IN — May'18 - June'19
Themes: Adaptive Model Predictive Control, Time Series Modeling
Tata Elxsi demonstrated Robo-Taxi at CES 2020 in Las Vegas.

Teaching Experience

- **Applied Data Science and Artificial Intelligence**, UMC 301, IISc — Aug'24 - Present
- **Introduction to Natural Language Processing**, DS 207, IISc — Jan'24 - Apr'24
- **Data Science in Practice**, DA 204o, IISc — Aug'23 - Dec'23
- **Introduction to Data Science**, DA 202o, IISc — Aug'22 - Dec'22
- **Systems and Control Lab**, EE332, CET — Aug'18 - Dec'18
- **Electronic Circuits Lab**, EE231, CET — Jan'18 - Apr'18
- **Electrical Machines Lab**, EE333, CET — Aug'17 - Dec'17

Professional Services

Volunteer: *International Conference on Artificial Intelligence in Education*, 2024

Program Committee: *Workshop on Innovative Use of NLP for Building Educational Applications*, NAACL, 2024

Reviewer: *Workshop on Generative AI for Education*, NeurIPS, 2023

Technical Skills

Languages: Proficient: Python | Basic: C, HTML/CSS, JavaScript, MATLAB, R, SQL

Toolkits: PyTorch, LangChain, LangGraph, FastAPI, Keras, HuggingFace, Docker

References

Will be provided on request