S I Harini

Goa, India

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Education

BITS Pilani K.K. Birla Goa Campus — *Goa, India*
Bachelor of Engineering — *Nov 2020 - Current*
- **Minor in Data Science**
- **Courses:** Linear Algebra, Differential Calculus, Probability and Statistics, Data Structures and Algorithms, Discrete mathematical structures, Object Oriented Programming, Database systems, Meta Learning, Artificial Intelligence, Machine Learning, Foundations of Data Science, Applied Statistical Methods

Experience

Autonomous Agents Lab, Stanford University — *India*
Research Intern — *Aug 2023-Present*
- Working on the creation of a game code evaluation benchmark.
- We propose a decompositional framework inspired by the design of game engines using LLMs.
- **Supervised by:** Dr. Nick Haber.

Adobe Media and Data Science Research — *USA*
Research Intern — *Jun 2023- Aug 2023*
- Developed a model to assess the memorability of multimodal content by leveraging Large Language Models (LLMs).
- Successfully deployed the model into a production environment to be used at a large scale.
- Conducted comprehensive ablation studies exploring the impact of memory types, modalities, brand considerations, and architectural choices, revealing valuable insights into the factors influencing memorability.
- Additionally, worked on the generation of memorable content from initially non-memorable material.

APPCAIR Lab, TCS Research — *Goa, India*
Student Researcher — *July 2022 - May 2023*
- Conducting research on techniques for solving the Abstract Reasoning Challenge (ARC) using meta learning and neurosymbolic approaches.
- Exploring the application of neuro-symbolic meta reinforcement learning for time series prediction, specifically trading.
- Collaborating with a team of researchers from TCS Research and **supervised by:** Dr. Ashwin Srinivasan.

Google Summer of Code
Contributor — *June 2022 - Sept 2022*
- Contributed to the development of ArviZ, a powerful tool for exploratory analysis of Bayesian models, and Gen.jl, a general-purpose probabilistic programming system with programmable inference embedded in Julia.
- Developed a compatibility layer for using ArviZ visualization functionality with Gen traces, to facilitate seamless integration between the two systems and improve their overall functionality.
- **Supervised by:** Ravin Kumar and Seth Axen.

Contenterra — *Hyderabad, India*
Summer Intern — *May 2022 - July 2022*
- Automated complex web testing processes using Cypress, a popular front-end testing framework, to enhance the quality of DesiDMS, an application developed by Contenterra.
- Gained hands-on experience in software testing and automation.

Computational Linguistics and Social Networks Lab — *Goa, India*
Student Researcher — *Jan 2022 - May 2022*
- Conducted research in the field of program synthesis and developed a novel model for carrying out Code Search, Duplicate Detection and Code Repair on various programming languages such as C, Python and Java.
- Used transfer learning to adapt CodeBert(trained on Java,Python,etc.) to C language.
- Investigated the application of few-shot learning techniques, such as Prototypical Networks and MAML, to program synthesis tasks and compared their performance with traditional supervised learning methods.
- **Supervised by:** Dr. Swati Agrawal.

Publications and Patents

Long-Term Memorability on Advertisements
Under Review
S I Harini, Somesh Singh*, Yaman Kumar*, Aanisha Bhattacharya, Veeky Baths, Changyou Chen, Rajiv Ratn Shah, Balaji Krishnamurty*
https://arxiv.org/abs/2309.00378

Neuro-symbolic Meta Reinforcement Learning for Trading *Washington DC, USA*

The AAAI-2023 Workshop On Multimodal AI For Financial Forecasting

S I Harini, Gautam Shroff, Ashwin Srinivasan, Prayushi Faldu, Lovekesh Vig

https://arxiv.org/pdf/2302.08996.pdf

Projects

Meta learning using JAX
Goa, India

Open Source Project
Nov 2021 - Apr 2022

- Implementing various Meta Learning alogrithms in JAX like MAML,FoMAML,etc.
- Benchmarked standard algorithms on few shot learning tasks.
- **Code can be found at: [link]**

DualNet Implementation
Goa,India

Course Project
Mar 2022 - Apr 2022

- Implemented the paper, DualNet from NeurIPS '21, which proposes a new architecture for continual learning.
- Extended the model to be used on financial market data and achieved promising results.
- Used Mixup and other techniques to further improve the performance of the model.
- **Code can be found at: [link]**

ATP Binding sites in protein synthesis
Goa,India

Project supervised by Dr. Swati Agrawal
Jan 2022 - Apr 2022

- Developed an ensemble model using CNNs and LightGBM for predicting ATP binding sites in protein sequences.
- Explored various feature engineering techniques to extract important structural features from the sequences, including secondary structure, physicochemical properties, and evolutionary conservation.
- Achieved competitive performance on benchmark datasets, demonstrating the potential of the proposed approach for understanding protein function.

Source code synthesis
Goa,India

Project supervised by Dr. Swati Agrawal
Jan 2022 - Apr 2022

- Built a preliminary model for Code search, with a simple encoder decoder architecture which computes the cosine similarity of the embeddings for searching.
- Finetuned the CodeBERT model for Code Search on C/C++.
- Trained and finetuned a code clone detection model across multiple languages.

Skills

Programming Python (Pandas, PyTorch, NumPy, Scikit-learn. etc.), Java, C/C++, Julia.

Miscellaneous Linux, Shell (Bash/Zsh), LaTeX, Git.

Teaching

| 2023 | **Meta Learning**, Teaching Assistant | *India* |
| 2022 | **Object Oriented Programming**, Teaching Assistant | *India* |