

Harikrishna Pillai

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ABOUT ME

Student at Amrita Vishwa Vidyapeetham, India, pursuing a B.Tech degree in Computer Science and Artificial Intelligence Engineering. Passionate about Machine Learning and Deep Learning models, with a particular interest in generative models like **GANs**, **Diffusion** models and **Transformers**. Experimenting with **Neuroscience** inspired AI topics. Working on **Adaptive and Collective Intelligence** using Growing Neural Networks. Other interests include Game Development and 3D Graphics, with experience in working with **Unity**, **Godot**, and **Blender**.

EDUCATION

Amrita Vishwa Vidyapeetham

B. Tech, Computer Science and Artificial Intelligence

Kerala, India
2021 – present

- Expected Graduation Year : 2025
- CGPA : 8.87

MKVV International Vidyalaya

High Secondary

Mumbai, India
2019 - 2021

- Marks: 93%

EXPERIENCE

ML Intern @ InSynk

Jan 2024 – June 2024

- Worked on creating custom E-commerce agents like product background generation, apparel background change, AI Ad Generation, Product Description tool etc. Used by E-commerce companies like flipkart, myntra, big bazar, reliance and many more. [product link](#)
- Worked on creating python backend and REST APIs. Also creating scripts that could generate fastapi code dynamically. [product link](#)

ML Intern @ Aveta.ai

August 2023 – Dec 2023

- Worked on making a special-purpose LLM for medical ICD coding.
- Used and explored techniques like RAG, Attention Manipulation and Prompt Engineering to optimize the LLM output.
- Created a tool that can analyze a PDF and intelligently separate all the patients data in different PDFs and save it.

Google Summer of Code 2022 @ INCF

June 2022 – Sep 2022

- Worked on mapping embryo microscopy images on a 3d ellipsoid generated using code. Created a Desktop application for its visualization.
- Used opencv library for image projection techniques and electron js for creating a desktop application to view and control the generated 3d object.

Mentor and Member @ amFOSS

Jan 2022 – present

- Actively contributing to open source software as a part of amFOSS, India's leading computer science club with over 60 passionate students.

RESEARCH

SEANN: Self Expanding and Adaptive Neural Networks

(On Going)

- This research aims to create such a structurally growing neural network and adaptive network. Currently, finished one of the goals of enabling continual learning. I am reading on neuroscience related articles to inspire some architectural changes in the current structure. Will release the code once we publish the work.

PROJECTS

insuranceLLM

[Blog](#)

- The goal of this project is to make an NLP model that can understand a doctor's clinical report and output the relevant ICD (International Disease Classification) codes.
- These codes are then used by the insurance company to give the insurance money.
- Challenging because we only have the ICD guidelines as the tabular data PDF.
- Worked on both vector similarity and Attention manipulation as the potential solutions.

Skit Lite

[Source Code](#)

- This project aims to automate call centers using voice AI. The project uses OpenAI whisper and GPT models like chatGPT or LLaMA to make this possible.
- The GUI is entirely managed by Streamlit.

Doodle Diffusion

[Source Code](#)

- This project aims to build a diffusion based model that generates Google doodles from given prompts.
- The Reverse diffusion process is done using a UNet model which takes a noisy image, timestamp and text as inputs. The timestamp is embedded into the model using Sine Cosine Embedding and the text is encoded using a CLIP encoder and then added to the noisy image.

Cosmic Diffusion

[Source Code](#)

- This project uses a basic diffusion model to generate new stunning 64x64 nebula images that don't exist.

nano NeRF

[Source Code](#)

- It is a nano NeRF model that is trained to reconstruct 3D embryos of Axolotl using just few of its microscopic images.

DeepDino

[Source Code](#)

- Predicts the next move for the dinosaur in the Chrome Dino game using a CNN model.

TECHNICAL SKILLS

Languages	: Python, Java, JavaScript, Dart, Kotlin, MATLAB, C++, GDScript
Frameworks	: PyTorch, Django, Flutter, Docker
Libraries	: OpenCV, numpy, pandas, REST_API
Databases	: MongoDB, SQLite, Redis
OS	: Linux (Garuda, Ubuntu, Fedora, PoP), Windows
Dev Tools	: Visual Studio Code, Git, GitHub, Gitlab, blender, Godot

PROFESSIONAL REFERENCES

Dr. Jayraj Poroor

Kollam, India

Dean of School of Artificial Intelligence
Amrita Vishwa Vidyapeetham, Amritapuri
jayaraj.poroor@gmail.com

Abhijit Ramesh

Kollam, India

ML Engineer especially for Medical AI companies
<https://abhijitramesh.me/>
abhijitramesh2k@gmail.com

EXTRACURRICULAR

Organized Workshop

- As a part of amFOSS, I organized an open source workshop for the first year students.
- During this 1 month long workshop, we taught them about Git, GitHub, Linux, Python, Web development and Android development.

NSEP (National Standard Examination in Physics)

- Cleared National Standard Examination in Physics and Qualified for Indian National Physics Olympiad

Captain of School Volleyball team

- Played as the captain of the school volleyball team and won second place in our district.