Samyak **S Sarnayak**

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Summary

An interested programmer looking to help in the development of projects so that I can further develop my skills and interests in AI, ML, Web development and computers in general.

Education

PES University — *Bengaluru, India*

B.Tech. in Computer Science and Engineering — *2018 - 2022*

- Currently in Fourth Semester.
- CGPA: 9.79.

Sri Kumaran Children's Home PU College — *Bengaluru, India*

Pre-University College — *2016 - 2018*

- Board: Department of Pre-University Education. Percentage in 2nd year PUC: 95.16%.

VLS International School — *Bengaluru, India*

Class 9 and 10 — *2014 - 2016*

- Board: Council for Indian Secondary Certificate Examinations (CISCE). Percentage in Class 10: 92.66%.

Whitefield Global School — *Bengaluru, India*

Class 6 to 8 — *2011 - 2014*

- Board: Central Board of Secondary Education (CBSE).

Bal Bhavan — *Binaga, Karwar*

Upto Class 4 — *2006 - 2010*

- Board: Karnataka State Board.

Skills

Programming	Python, C, Julia, JavaScript, Java (basics)
Deep Learning	Artificial Neural Networks, CNN, RNN, Deploying models
Data Science	Collecting, Cleaning, Visualisation, Basic Machine Learning
Blockchain	Solidity, Web3.js, Truffle, Web3.py
SysAdmin	Linux, Configuring and Integrating different servers
Back-end	Flask, REST APIs, Heroku, PHP
Front-end	HTML5, CSS, JavaScript, JQuery, Bootstrap, AJAX

Projects

Bengaluru's Greenest Areas — *PES University*

Computer vision and multi-threaded map-reduce — *May 2020*

- Collected 5,38,000 satellite images of Bengaluru. Processed all images to find the percent of green using OpenCV.
- Performed reverse geo-coding to map area name to co-ordinates.
- Implemented a custom multi-threaded map-reduce in python.
- Website: `https://ccbd-bangalore.herokuapp.com/`

SVDNN.jl — *PES University*

Accelerating Deep Neural Networks using SVD — *May 2020*

- Used Singular Value Decomposition to decrease training time of feedforward neural network.
- Implemented in Julia using the Flux ML library.
- Experimented on a few datasets and noticed good results.

NeuralNetwork.jl

A Neural Network Implementation in Julia, with GPU Support — *Jan. 2020 - Till date*

- Implemented a n-layer neural network from scratch using pure Julia.
- Currently supports only binary classification. More info here: `https://github.com/Samyak2/Neural-Network-Julia`
- Support for training on GPUs using CuArrays.jl, CUDAnative.jl. Optimised using custom GPU kernels.

CapStyle

CDSAML

Stylized Image Captioning using Deep Learning Models

Jun. 2019 - Till date

- Created a custom dataset named CapStyle5k derived from Flickr8k.
- Implemented a sequence-to-sequence encoder decoder model with attention.
- Tools used: Python, Keras, Tensorflow GPU, CUDA, Flickr8K dataset.

Park-O-Report

HackBout 2020, NMIT, Bengaluru

An app to report illegally parked vehicles

Mar. 2020

- Made a react native app with integrations for Firebase - login, storage, database, cloud messaging, Tensorflow Lite object detection (for detecting vehicles in the picture and its number plate) and API calls to the server.
- Built multiple APIs in Flask for Number plate recognition (OCR) and Geospatial indexing which is used to notify nearby users.
- Tools used: Python, React Native, Flask, Firebase, Tensorflow, TFLite, Geopandas.

BlockChat

PES University

A blockchain based messaging application

Sep. 2019 - Nov. 2019

- Implemented a Python-based blockchain API with encryption.
- Built a complete web application with HTML, CSS and JavaScript on the front-end and PHP on the backend
- Web App link: `https://blockchat-webwarriors.000webhostapp.com/`.
- Tools used: Python3, Flask, Heroku, Cryptography python module, Firebase, HTML, CSS, Bootstrap, JavaScript, JQuery, AJAX, PHP, 000webhost.

Time Series Analysis of Amazon.in data

PES University

A data science project about collecting and analysing Amazon data

Sep. 2019 - Nov. 2019

- Created a custom web scraper to collect data on a few products periodically. Tools used: Python, Scrapy, PostgreSQL, Heroku.
- Performed data preprocessing - cleaning, normalisation, standardisation and generated several visualisations.
- Performed a few hypothesis tests and checked for correlation using different plots and linear regression.

PulmOss

Hashcode, PES University

Abnormality Detection from Diagnostic Images using Deep Learning

Oct. 2019

- Classification and Detection of Abnormalities in lung and bone X-Ray images.
- The model also accepted numerical and categorical inputs such as patient age and gender.

Complete Server Setup

PES University

Integrating various components of a web server

Oct. 2019

- A basic Web Application made by integrating a web server (Apache), an application server (Django), a database server (MySQL), a loadbalancer (HAProxy) and a firewall (ufw).
- Different servers were configured and integrated to create a multi-server architecture.

Recipe Viewer

DSC PESU

A web app to aid in cooking

Jun. 2019 - Till date

- A Heroku web app which extracts text from images of printed recipes or screenshots of a recipe.
- NLP is performed on the text and images, videos, GIFs are displayed based on the ingredients and steps.
- Link to web app: `http://dsc-flask-api-heroku.herokuapp.com/`

Sentiment Analysis of Tweets

PES University

in C

Jan. 2019 - Apr. 2019

- A (pure) C program that gets random tweets from the Twitter API and performs basic sentiment analysis on it using a dataset of words and associated sentiment.
- Tools used: C programming language, libcurl, libssl, Twitter API, SentiWords dataset.

Web Browser History Analyser

PES University

A Python program to extract and analyse browser history

Sep. 2018 - Nov. 2018

- A python program that extracts the browser history of the user. It then categorizes the websites and displays statistics using graphs.
- Finally it tries to predict the gender of the user (prototype - uses a very small dataset).
- Tools used: python, pandas, matplotlib, sklearn

Experience

Deeplogick

Bengaluru, India

Intern

Dec. 2019 - Till date

- Trained and deployed object detection models based on SSD MobileNet V2.
- Optimised models to run on GPUs and Jetson Nano using TensorRT.
- Built an API for managing a object detection model trainer through a scheduler.

Center for Data Science and Applied Machine Learning

PES University

Project Intern

Jun. 2019 - Aug. 2019

- Built CapStyle - a deep learning model to generate stylized image captions.
- Generated a dataset of images and stylized captions for those images, based on the Flickr8k dataset.
- Tested various different combinations of layers and models using many automated image caption evaluation metrics including BLEU, ROUGE, METEOR, SPICE, CIDEr.
- A paper based on this is project will be published.

Extracurricular Activity

ISFCR CTF

ISFCR, PES University

1st place winner

May 2020

- Capture-The-Flag hackathon conducted by Center for Information Security, Forensics and Cyber Resilience.
- Included challenges from a wide variety of topics including Database security, Web security, linux, steganography and cryptography.

PES Open Source

PES University

Core Member

Sep. 2019 - Till date

- Part of the core technical team. Website: `https://pesos.github.io/`.
- Helped organise Hacktoberfest 2019 events at PES University.

AI Challenge at Phase Shift 2019

BMSCE, Bengaluru

2nd Place Winner

Oct. 2019

- Built an object detection and classification model for recognising and classifying waste products in a given image.

Honors & Awards

2019	**12th Rank in 2nd semester CSE**, CNR Rao merit scholarship with a SGPA of 9.83	*PES University*
2018	**12th Rank in 1st semester CSE**, CNR Rao merit scholarship with a SGPA of 9.83	*PES University*
2017	**State Rank 92**, National Level Science Talent Search Examination (NSTSE)	*Bengaluru, India*
2012	**International Rank 73**, 15th National Science Olympiad	*India*

For an up-to-date version of my CV, visit `https://samyak2.github.io/about/`