

# 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

B.TECH. IN COMPUTER SCIENCE AND ENGINEERING

- Currently in Fourth Semester.
- CGPA: 9.79.

Bengaluru, India

2018 - 2022

### Sri Kumaran Children's Home PU College

PRE-UNIVERSITY COLLEGE

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

Bengaluru, India

2016 - 2018

### VLS International School

CLASS 9 AND 10

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

Bengaluru, India

2014 - 2016

### Whitefield Global School

CLASS 6 TO 8

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

Bengaluru, India

2011 - 2014

### Bal Bhavan

UPTO CLASS 4

- Board: Karnataka State Board.

Binaga, Karwar

2006 - 2010

## Skills

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

## Projects

### NeuralNetwork.jl

A NEURAL NETWORK IMPLEMENTATION IN JULIA, WITH GPU SUPPORT

- 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.

Jan. 2020 - Till date

### CapStyle

STYLIZED IMAGE CAPTIONING USING DEEP LEARNING MODELS

- 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.

CDSAML

Jun. 2019 - Till date

### Park-O-Report

AN APP TO REPORT ILLEGALLY PARKED VEHICLES

- 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.

HackBout 2020, NMII, Bengaluru

Mar. 2020

## 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

## 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

2ND PLACE WINNER

BMSCE, Bengaluru

Oct. 2019

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

## Honors & Awards

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

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