SHIVAM SHRIRAO

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Education

Dr. Vishwanath Karad MIT World Peace University , Pune

B. Tech. in Computer Science & Engineering | CGPA: 8.86/10 *(July 2017 - June 2021)*

- **Coursework**: Deep Learning, Machine Learning, Artificial Intelligence, NLP, Big Data, ARVR, System Software & Compilers, Theory of Computation, Operating systems, Data Structures & Algorithms, DBMS, Computer Networks

Experience

IDeaS - A SAS Company | **Internship**, Associate Software Developer Intern , Pune, India *(February 2020 - July 2020)*

- Developed a **Currency Exchange Rate server** and API using **SpringBoot**, deployed on **AWS** lambda and EC2.
- Developed an **Employee Competency Framework** & **Dashboard** using **Django** with central **MySQL** database with a user friendly **UI** to be used by HR dept. and managers in place of formerly used large excel sheets.

Achievements

- **Finalist in National Innovation Contest** by IIC, MoE's Innovation Cell, AICTE, among 9,000+ participants - 2021
- **Winner of Google Build for Digital India with MeitY**, among 7,000+ participants all over India, Awarded 6 months mentorship by Google Mentor's network - 2020
- **Smart India Hackathon Finalist** Team and **Winner** of **Internal Smart India Hackathon** software edition - 2020
- **Winner** of **iLink Systems IOT Hackathon** - 2019
- **2nd position** at NTT Data Code For Good Hackathon - 2019
- Incubation at BNest Foundation for our solution in **Bhopal Smart City Hackathon**, 4th position - 2019
- 5th position in final round of **India Police Hackathon** - 2019
- **Winner** of IEEE Code Jam - 2018

Projects

Garbage Detection and Collection System | **Google Build for Digital India** *(December 2019 - June 2020)*

- Developed the **winning solution** using **custom lightweight network** with **MobilenetV3** backbone to **detect**, **segment** & **segregate** garbage in **video feed** from moving vehicles and drones, upto **3 times faster** than **SSD mobilenetV2**.
- A manager's and collector's app was developed to assign and accept collection tasks from **firebase** database.

3D biomedical segmentation with Attention Augmented blocks | **Btech. Capstone proj.** *(November 2020 - June 2021)*

- Developed a **custom 3D Unet style** architecture for semantic **segmentation** with **self attention** augmented **residual bottleneck** blocks and **grouped convolution** to get a high dice coefficient score with just a **fraction** of parameters.

Deep Neural Network library from scratch

- A deep learning library in Python implemented using **numpy**(CPU) and **CuPy**(GPU) for **CNNs**, **ANNs**, **GANs**, and more with automated backpropagation **(autograd)** and easy to use API.

Image Captioning with Transformers

- Used pre-trained **Vision model backbone** to extract **image features**, flattened and fed to a transformer.
- The **transformer decoder** is trained on extracted features from the COCO dataset to generate **image descriptions**.

Movie Recommendation and Similar Questions Search using BERT

- Used **BERT** to generate **embeddings** for movie plot or Quora questions and compared using **cosine similarity**.
- Made a **multilingual chatbot** to help browse the website.
- The database was stored in **MongoDB** and served using **Flask**. Frontend in **Jquery**, **bootstrap**, **D3.js** and **w3.css**.

Other Projects

- Used **CLIP** by OpenAI for Image and Video frame search using natural language description.
- Used ultrasonic, **SSD mobilenetV2, openCV**, pytesseract, dlib to **verify the number plate** and **face** to open garage door.
- Built a **self balancing robot** using **LQR** and **PID** controllers, Mathematical modeling and simulation done in MATLAB. **Arduino Mega** microcontroller, **gyroscope** and **Zigbee** used to send and receive control data from a joystick.
- Implemented **Deep Q learning** and **genetic algorithms** to play Atari games, flappy bird, dino, etc. from visual input.

Technical Skills

- **Languages:** Python, C/C++, Java, SQL
- **Libraries:** Pytorch, Tensorflow, Keras, Jax, Numpy, CuPy, OpenCV, sklearn, Pandas
- **Web Frameworks and Database:** Django, Flask, SpringBoot, MySQL, MongoDB, Firebase
- Computer Vision, NLP, Binary Exploitation, Reverse Engineering, Assembly, Linux, AWS, Git

Publications

- Air Quality Index forecasting using parallel Dense Neural Network and LSTM cell IEEE - INCET, *June 2020*

Other Interests

Writing articles, Solving hacking CTFs, playing video games, TV series, swimming, reading about space time