

# SHANMUKHA VELLAMCHETI

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<https://shanmukha-mail.github.io/>

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## OBJECTIVE

I'm a self-motivated, hardworking Artificial General Intelligence believer, seeking to develop something that has impact all over the globe and beyond it.

## SUMMARY

- Computer Science and Engineering major from NIT Raipur with a CGPA of 9.09/10
- One paper published at IEEE ICPC2T, 2020 and another one under review in Springer journal (Both are in Deep Learning)
- Interned at Optum Global Solutions (UHG), Omnipresent RobotTech (one of the top robotics startups in India) & Pucho Technologies (an early stage startup)
- Finalists in multiple hackathons like SKY Hack (A govt. hackathon), Optum Global Hackathon, HCL Machine Learning Hackathon etc.

## EDUCATION

**Masters in Intelligent, Systems, Robotics and Control (Electrical and Computer Engineering)**

From **University of California San Diego, San Diego, USA**, *Sept 2021 – current*

**Bachelor of Technology in Computer Science and Engineering**

from **National Institute of Technology Raipur, Raipur, India**, *Aug 2016 - June 2020*

**B.Tech Courses included:**

**CGPA - 9.09/10**

C/C++

Data Structures & Algorithms

DBMS

Theory of Computation

Artificial Intelligence & ANN

Cryptography & Security

Network Programming

Software Project Management

## EXPERIENCE

**Publication, Present**

**Aspect Based Sentiment Analysis using ELMo and Coattention, India**

- Shanmukha Vellamcheti, Pravin Kumar, Manu Vardhan.
- It is under review in Springer journal
- Developed a novel NN architecture with CoAttention mechanism at it's core in order to tackle the problem of Aspect Based Sentiment Analysis (ABSA)

**Computer Vision intern, August 2020-November 2020**

**Omnipresent RobotTech, Gurgaon, Haryana**

- Working on real time deployment of Social distancing & mask monitoring Software.
- I helped the team in optimizing the performance of DNN models, ensuring scalability of the no. of parallel CCTV streams that can be processed, thereby cutting the deployment cost.
- I also ported an existing Tensorflow model to Pytorch model.
- We used Pytorch, Tensorflow, OpenCV, Sklearn, Matplotlib.

### **Project, June 2020**

#### **Trained a Reinforcement Learning agent on Mountain Car environment, India**

- Trained an agent in a way that mountain car can navigate itself to the destination by altering velocity and position.
- Q-learning algorithm was used and environment was taken from OpenAI's gym.
- Data: OpenAI Gym
- Algorithm: Q-Learning
- Major tool(s): Numpy, Matplotlib
- <https://shanmukha-mail.github.io/portfolio/1 RL Qlearn mount car/>

### **Project, June 2020**

#### **Face Mask Detector, India**

- Trained RetinaNet with ResNet-50 as backbone using Wobot intelligence's face mask dataset on kaggle
- Though the amount of training time was limited by GPU hours on kaggle kernels, the detection of boxes on the test set was impressive
- Data: Wobot intelligence face mask data (<https://www.kaggle.com/wobotintelligence/face-mask-detection-dataset>)
- Algorithm: RetinaNet, ResNet-50
- Major tool(s): Pytorch, OpenCV, Numpy, Matplotlib, Pandas
- <https://shanmukha-mail.github.io/portfolio/2 Face mask det/>

### **Publication, January 2020**

#### **Class Imbalance Deep Learning for Bankruptcy Prediction, India**

- Shanmukha Vellamcheti, Pradeep Singh
- First International Conference on Power, Control and Computing Technologies (IEEEICPC2T 2020)
- We present a way to tackle class imbalance problem in Neural Networks by using sampling techniques like SMOTE.
- <https://shanmukha-mail.github.io/publication/2020-01-05-class-imb-dl-bank>

### **Project, September 2019-December 2019**

#### **Federated Learning for Sentiment Analysis using Neural Networks, India**

- As a part of Minor Project we tried to integrate two different research fields namely Federated Learning and Sentiment Analysis
- Data: modified from sentiment140 (<https://www.kaggle.com/kazanova/sentiment140>)
- Algorithm: BiLSTM, ELMO, Federated averaging
- Major tool(s): Tensorflow, Keras, Tensorflow-federated, NLTK, Numpy, Pandas
- <https://shanmukha-mail.github.io/portfolio/3 FedL SA/>

### **Deep Learning intern, May 2019-July 2019**

#### **Optum Global Solutions (UHG), Gurgaon, Haryana**

- I prepared a POC and added a Machine Learning feature to the Medical Benefit Management System(MBMS) by analyzing a large-scale database.
- I had to deal with and understand a large scale database containing medical jargon in order to extract the features efficiently.
- I used Tensorflow, Sklearn, Numpy, Pandas, Matplotlib.

### **Computer Vision intern, September 2018-December 2018**

#### **Pucho Technologies, Bangalore, Karnataka**

- Dealt with Multilingual OCR as part of Computer Vision team and implemented a Neural Network model for Devanagari script.

- As this was a research internship, I had to perform a lot of literature survey in order to combine and use various benchmark architectures on this topic to obtain best possible results. I used Tensorflow, OpenCV, Numpy, Matplotlib.

## **ACTIVITIES**

- One of the finalists in the Optum Global Hackathon. We developed a chatbot which helps depressed people
- One of the 5 finalists out of 106 teams in a Government hackathon (SKY hack). We developed a chatbot for analyzing the symptoms of differently abled children
- We worked on developing a License Plate Detection app in Hack in The North at IIIT Allahabad – one of the largest student organized hackathon in India
- Successfully cleared 1st level of Junior Science Olympiad (JSO) - a National wide olympiad
- Was an active Member of Research and Development Team of Association of Computer Engineers (ACE), Raipur, India where we organized conferences and workshops on latest technologies and trends
- Was member of Unnat Bharat Abhiyaan, which is a government initiative for social cause to help the development of rural areas