# Pushpak Patil

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## EDUCATION

VNIT, Nagpur
| 2017 - PRESENT
B.Tech in Electronics and Communication Engineering
CGPA: 9.45/10

## COURSEWORK

### Machine Learning
•Machine Learning
•Neural Networks and Deep Learning
•Improving Deep Neural Networks
•Convolutional Neural Networks
•Computer Vision

### Electronics
•Digital Logic Design
•Analog Circuit Design
•Microcontrollers and Interfacing
•Signal and Systems
•Speech Processing
•Embedded Systems

### Mathematics
•Numerical Methods and Probability Theory
•Integral Transforms and Partial Differential Equations

## SKILLS

### Programming Languages
C /C++, Python.

### Software Packages
MATLAB , Praat , Multisim , Eagle , Cadfeko.

### Digital Design Languages
VHDL , Verilog

### Others
Assembly Language Programming , Machine learning and Deep learning , Computer Vision , HTML, CSS

## EXTRACURRICULAR

### Singing
I have learnt Hindustani Music

### Academic Secretary
*(July 2019 – present)*

### Trekking

## EXPERIENCE

### Digital Sound synthesizer using Plucked-String and Drum algorithm, Summer Intern
*(April 2020 – July 2020)*

Guide: - Dr. Preeti Rao, Indian Institute of Technology, Bombay.

● Implementation of synthesizer using speech processing to produce realistic sound of instruments such as Plucked-string and Drum.

## PROJECTS

### Real-Time Lane Detection
•The project uses OpenCv for reading the videos of the road. The video frames were smoothened using the GaussianBlur function.
•Region of interest (ROI) was identified and then edges of the lanes were detected using Canny method.
•Using Hough Transform the straight lines in the frames were identified. Further the lines were optimized by averaging out the slope and y-intercept of multiple lines into a single line and the lane was obtained.

### Traffic Symbols Recognition
•Deep neural network model was built with the help of sequential model available in Keras that can classify traffic signs into 43 different classes.
•The model was compiled with Adam optimizer which performs well and categorical_crossentropy loss function was used because we have multiple classes to categorize.
•The model was trained with the dataset containing more than 50,000 images of different traffic signs. The test accuracy achieved by the model is 95%.

### Real-Time Driver Drowsiness Detection
•Using OpenCv, the face and the eyes of the driver were detected and then a CNN model was used that can predict the state of a person's eye Open or Closed.
•A threshold score was set, above which an alarm is played to create an alert.
•Input was taken from webcam then the face and eyes were identified by creating the region of interest.

### Sign Language Convertor
•This project was based on converting sign language to words and letters.
•In this project the movement of hand was detected using flex sensors and the result was displayed using a LCD.
•The project was aimed at helping Deaf and dumb people to communicate with others.

## ACHIEVEMENTS

### Delegate
*(September 2019)*
Represented India as Youth Delegate in Tajikistan

### Academic Excellence Prize
For exhibiting Best Performance in Second year B.Tech Electronics & Communication Engineering

### Won second prize for creative writing in Institute gathering
VNIT,Nagpur