

# Soumil Chugh

<https://soumilchugh.github.io/> | 647.807.0797 | [soumil.chugh@gmail.com](mailto:soumil.chugh@gmail.com)

## EDUCATION

### UNIVERSITY OF TORONTO

MASC IN COMPUTER  
ENGINEERING

September 2020 | Toronto,  
Canada

### PANJAB UNIVERSITY

BE IN ELECTRONICS AND  
COMMUNICATION

July 2015 | Panjab, India

## LINKS

Github:// [soumilchugh](#)

LinkedIn:// [soumilchugh](#)

Twitter:// [@soumilchugh](#)

## SKILLS

### PROGRAMMING

- Python
- Android
- C++
- C
- MATLAB
- C#

### LIBRARIES/CLOUD

- Tensorflow
- OpenCV
- Unity3D
- AWS
- GCP

## EXPERIENCE

### UNIVERSITY OF TORONTO | GRADUATE RESEARCHER

Sep 2018 - PRESENT | Toronto

- Designed a binocular eye tracking system for a Virtual Reality Headset.
- Used advanced deep learning techniques (semantic segmentation) for accurate and precise eye feature estimation.
- Wrote complete system software using three different programming languages (C++, python and C#).

### JANA CARE | SOFTWARE AND HARDWARE ENGINEER

Sep 2015 - Aug 2018 | Bengaluru, India

- Led the software development of a smartphone controlled robotic system that automates a complex blood test. Wrote the system code in Android and C.
- Wrote and reviewed C interface between a smartphone and a MSP430 for Audio Communication.
- Implemented Bluetooth Low Energy Stack on Android and Cortex ARM-M4 platform.

### PANJAB UNIVERSITY | RESEARCH INTERN

January 2014 - Aug 2015 | India

- Worked in the Image Processing and Embedded Systems Lab.
- Designed a segmentation algorithm for detection of lesions/exudates as a part of Computer Aided Design Software for retinal fundus images.
- Designed and developed a non-invasive portable hemoglobin monitoring device.

## ACADEMIC PROJECTS

### VIDEO BASED ACTION RECOGNITION May 2020 - June 2020

Designed a non-causal action recognition model in Tensorflow based on 3D convolutions that takes in input a video and outputs the action corresponding to the video. Achieved 70% accuracy on the Kinetics600 dataset.

### OBJECT DETECTION IN AERIAL IMAGES March 2020 - April 2020

Designed a 7 class object detector using two approaches: RCNN and Yolo in Tensorflow using Stanford Drone Dataset. MAP of 60% was achieved.

### LANE SEGMENTATION Nov 2019 - Dec 2019

Designed a segmentation algorithm in Tensorflow using BDD100K dataset for identifying curved or straight lanes on a road under different weather conditions. Average IOU of 0.75 is achieved.

### VISUAL QUESTION ANSWERING TOOL Aug 2019 - Sep 2019

Designed a visual question answering tool with the input being an image and a corresponding question related to the image and output being answer to that question. Achieved 55% accuracy on the VQA dataset.

## PUBLICATIONS

- [1] "An eye tracking system for virtual reality headset," *ACM Transactions on Human Computer Interaction*, in review.
- [2] "Corneal reflection detection and correspondance matching using deep learning," *ICPR*, 2020.
- [3] "Exudates segmentation in retinal fundus images for the detection of diabetic retinopathy," *IJERT*, 2014.