

Soumil Chugh

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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
- C++
- C

LIBRARIES

- Tensorflow
- Pytorch
- OpenCV

EXPERIENCE

HUAWEI HUMAN MACHINE INTERACTION LAB | HCI RESEARCHER

Aug 2020 - PRESENT | Toronto

- Currently leading a team to design a IR eye tracking system for in-car scenario.
- Have developed a new algorithm that uses minimal hardware to achieve 1.5° accuracy.
- Used supervised and unsupervised machine learning techniques for eye feature extraction.
- Lead a team for designing an RGB image based eye tracking system that runs on everyday devices such as laptops/smartphones.
- Used deep learning techniques for estimating final gaze point.
- Achieved accuracy of 5°/30 mm under varying conditions.

GENERAL PROGNOSTICS (GPX) | SOFTWARE ENGINEER (CONSULTANT)

Aug 2020 - PRESENT | Toronto

- Leading the software development of a smartwatch designed for elderly patients.
- Helped design a Computer Vision system that analyses a blood collection card.

UNIVERSITY OF TORONTO | GRADUATE RESEARCHER

Sep 2018 - Aug 2020 | Toronto

- Designed a binocular eye tracking system for a Virtual Reality Headset.
- Used 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#).
- Achieved accuracy of 1° under device motion and changing fixation distance in 3D.

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 Java 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.

PATENTS AND PUBLICATIONS

- [1] "Eye tracking system using one corneal reflection," U.S. Patent 2022.
- [2] "Gaze estimation and devices," U.S. Patent 2021.
- [3] "Quality control of user generated biological sample cards," U.S. Patent 2021.
- [4] "An eye tracking system for virtual reality headset," *UoT*, 2020.
- [5] "Corneal reflection detection and correspondance matching using deep learning," *ICPR*, 2020.
- [6] "Eye region detection in remote eye tracking systems using deep learning," in progress.
- [7] "Boundary aware network for pupil segmentation," in progress.