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
- Java
- C++
- C
- MATLAB
- C#

LIBRARIES/CLOUD

- Tensorflow
- Pytorch
- OpenCV
- Unity3D
- AWS
- GCP

EXPERIENCE

HUAWEI NOAH'S ARK LAB | HCI RESEARCHER
Aug 2020 - PRESENT | Toronto

- Currently leading a team to design a IR eye tracking system for in-car scenario.
- Using self-supervised and supervised 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 and computer vision techniques for estimating final gaze point.
- Achieved accuracy of $5°$/30 mm under different head poses and lighting conditions.

GENERAL PROGNOSTICS (GPX) | Software Engineer (Consultant)
Aug 2020 - PRESENT | Toronto

- Leading the software development of a smartwatch designed for elderly patients.
- Working on building a system that performs analysis of a blood collection card using computer vision techniques.

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] "Head pose and illumination invariant eye tracking system for mobile devices based on rgb cameras," U.S. Patent 2021.

[2] "Smart sampling of blood collection card using computer vision," U.S. Patent 2021.

[3] "An eye tracking system for virtual reality headset," *CHI*, 2022.

[4] "Corneal reflection detection and correspondance matching using deep learning," *ICPR*, 2020.

[5] "Non-invasive hemoglobin monitoring device," *IEEE*, 2015.

[6] "Exudates segmentation in retinal fundus images for the detection of diabetic retinopathy," *IJERT*, 2014.

[7] "Low cost calibration free pulse oximeter," *IEEE*, 2015.

[8] "Effect of different signal processing techniques on a calibration free pulse oximeter," *IEEE*, 2018.