HARSHIT CHAUHAN

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Education

Maharaja Surajmal Institute of Technology, GGSIPU — Delhi
B.Tech , Information Technology — *Aug. 2016 – May 2020*
- 8.1/10.0

Experience

Graduate Researcher — Jan 2021 – Present
Monash University, Australia | IIIT-D — *Remote*
- Advisors: Dr.Abhinav Dhall, Dr.Jainendra Shukla
- This is a collaborative project between the aforementioned professors.
- Working on a novel set of neuro-marketing research problems in Indian context.
- Computer Vision , Statistical modelling , Affective computing.

Research Associate — Oct 2020 – Present
HMI Lab — *IIIT-Delhi*
- Advisor: Dr. Jainendra Shukla , Dr. Sonia Baloni Ray
- Working on an array of research problems related to HCI, Computer vision and role of physiological signals.
- Setting up synchronization and communication protocol for data acquisition.

Research Intern — Nov 2019 – June 2020
HMI Lab — *IIIT-Delhi*
- Worked at Human-Machine-Interaction Lab
- Eye Tracking and Analysis using Statistical Machine Learning models.

Teaching Assistant — June 2019 – Aug 2019
Coding Blocks — *Delhi*
- Teaching Assistant for the Machine learning with python course at Coding Blocks, Dwarka.

Research : Projects

Tencent ACMMM Video Understanding Challenge 2021
Advisors : Dr. Jainedra Shukla, Dr. Abhinav Dhall
* Secured 42/294 rank reaching into the semi-final stage with a GAP score of 0.78.
* Pytorch/Pytorch lightning based multi-modal multi-label prediction model.
* Created a Video pipeline from scratch for C3D + NeXtVLAD and LGSS+Xception+ NeXtVLAD in Pytorch.
* Text pipeline :Finetuned BERT model, Audio pipeline: VGGish + NeXTVLAD, Image pipeline : Resnet V2 50
* Experimented with various fusion based strategies from simple MLP to cross-attention.

Multi-modal Analysis of attention in young ADHD pupils & their typically growing counter-parts.
Advisors : Dr. Jainendra Shukla , Mr. Vishal Saxena
* The purpose of this study is to predict the attention levels of above mentioned groups.
* Developed both online and offline data collection protocols. [**Link**]
* Multi-modal attention prediction model using FAUs, Gaze maps, HRV. [**Project Website**]

Neuro-Marketing Analysis of Video Advertisements among people of Indian Ethnicity.
Advisors : Dr. Jainedra Shukla, Dr. Abhinav Dhall

* Aim is to perform quantitative analysis and multi-modal analysis of advertisements and consumer behaviour in Indian context using physiological signals from webcam.
* Created on online data collection protocol using JsPsych, Node.js and webgazer.js [Link]

Studying the role of eye and facial feature processing associated with Uncanny Valley effect
Members : Ojasva Saxena, Dr. Sonia Baloni Ray

* The purpose of this study is to find correlations between gaze movements, facial features and uncanny valley effect
* Assisted the project by setting up of the data collection protocol.

Publications

Short Paper(Accepted)

2020**Harshit Chauhan**, Anmol Prasad, Jainendra Shukla Engagement Analysis of ADHD students using visual cues from eye-tracker In ***ACM ICMI 2020*** [Paper] [Video]

Relevant Projects

Webcam Based Eye tracker 2020

* A webcam based eye tracker using open-source eye region localization model GazeML, regression model for mapping on-screen gaze position to eye visual angles & Kalman filtering for smooth transition.

Attention PLease! 2020

* Locally hosted video conferencing application with python's zmq that predicts user's attention using lbtop facial feature and gaze fixation features using a Conv-LSTM model.

Opencv on live stream 2020

* A Flutter plugin which runs opencv on live stream by calling the native android code.

iSeeYou 2019

* the complete eye tracking analysis kit using GazeML , opencv and pygame. This eye tracker performs a 9 point calibration and uses kalman filtering for smoothing along with that it allows the user to visualize the fixation plots and graphs at the end.

Dr.BonnAI 2019

* n this project we have attempted to replicate music therapy based neurological sessions with the help of opencv ,pygame and xgboost model trained on a custom dataset. The model changes the background music on the basis of certain eye movements.

YogAI 2019

* A Posenet based Yoga Instructor manages and suggests workout routines accordingly.

Awards & Recognitions

RIISE 2020
Poster Presentation *IIIT-D*
* Presented poster for Multi-modal analysis of ADHD using physiological signals.

MedHacks 2019
Shortlisted *John Hopkins University,Baltimore*

SIG Mentor 2019
IEEE-MSIT *MSIT,Delhi*
* Machine learning with python course at IEEE-MSIT.

Technical Project Exhibition 2019
Runner-up *MSIT,Delhi*
* Secured 2nd position at the project exhibition amongst 14 teams.

MSIT Hackathon 2019
Organizer | Mentor *MSIT,Delhi*
* Organised a 12 hours long hackathon at MSIT, Delhi with teams participating from all the premier technical institutes over Delhi.

HackDTU 3.0 2019
Runner-up *DTU,Delhi*
* Secured 2nd position out of 283 teams at DTU,Delhi.
* Project Presented: Dr.BonnAI.

HackOKPlease! 2018
Runner-up *NSUT, Delhi*
* Secured 2nd position out of 50 teams at NSUT,Delhi.
* Project Presented: YogAI.

CIC Hackathon 2018
Special Mention *CIC,Delhi*
* Received a special mention from the judges and the mentors
* Project Presented: DiabetAR : A smart app for monitoring and managing glucose levels and insulin dosage.

Skills

Languages: Python, C/C++, C#, SQL, JavaScript, HTML/CSS,
Framework & tools: Keras, PyTorch, Scikit-learn, Pandas, Numpy, Matplotlib, aiortc, Psychopy, Opencv, LSL
Familiar: Flask, Android Studio, Arduino Processing, Flutter, Django
Developer Tools: Jupyter Notebooks, Git, Google Cloud Platform, VS Code
Blog: Medium

Mentors

Dr. Jainendra Shukla: IIIT-D
Dr. Abhinav Dhall: Monash University, Australia
Dr. Adeel S. Hashmi: MSIT,Delhi
Dr. Sonia Baloni Ray: IIIT-D