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Apurv Varshney

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Interests: Human Computer Interaction (HCI) and Computer Vision

Education

M.S. in Computer Science, University of California Santa Barbara (UCSB), GPA: 3.94/4.00 **Jan 2021 — Dec 2022***
Courses: Future User Interfaces, Machine Intelligence, Scalable Internet Services, Bionic Vision, Runtime Systems

B.Tech in Computer Science and Engineering, Indian Institute of Technology (IIT) Goa **Aug 2016 — July 2020**

Relevant Projects

Evaluation of Subretinal Prosthetic Implant (PRIMA) Simulation for Visual Acuity **Fall 2021**
- Aim: To evaluate the visual acuity that can be acheived by PRIMA prosthetic implant
- Built a gaze-contingent VR experiment to simulate PRIMA prosthesis
- Developed using HTC Vive Pro Headset, Unity and pulse2percept

Flick Gesture Interaction in Augmented Reality: AR Carrom **Spring 2021**
- Built an AR app with a flick gesture mechanic that utilizes hand gestures and doesn't rely on any external hardware
- Developed using Unity, ARCore and Manomotion

Performance Analysis and Optimization on Edge AI devices **Spring 2021**
- Aim: To study Optimization Techniques to increase inference performance on Edge devices
- Studied Nvidia's Nsight profiling tool and compared performance of basic AI models using TensorRT on Jetson Nano

Facial Emotion Recognition **Winter 2021**
- Aim: Given an image, identify the emotion expressed within the image
- Compared the performance of different classifiers (SVM, CNN, GAN) and dimensionality reduction techniques (PCA, AutoEncoders (AE), Convolutional AE) on FER 2013 dataset
- Implemented a Super Resolution model using AEs to study the effects of super resolution images on classification task

Cancer subtype detection using Human Gene Expression data **Jan 2020 — Jul 2020**
- Bachelor's Project, Advisor: Dr. Clint P. George
- Aim: Clustering and detection of different cancer types using the Gene Expression data through Unsupervised Clustering & dimensionality reduction techniques to help in diagnostic and to reveal possible previously unknown cancer subtypes.
- Optimized Autoencoder model for Breast Cancer Data using Keras API

Relevant Experience

Graduate Student Researcher, Bionic Vision Lab **Fall 2021 — present**
- Developing AR/VR systems to simulate prosthetic vision to help solve blindness and low vision.

Teaching Assistant
- CS 64 (Computer Organization and Digital Logic Design) **Fall 2021 & Winter 2021**
- CS 16 (Problem Solving with Computers) **Summer 2021**
- CS 160 (Translation of Programming Languages) **Spring 2021**

Data Science Intern, eClerx Services Mumbai **May 2019 — Jul 2019**
- Built a model to extract Trending Financial News from data collected by scraping news websites using Natural Language Processing & Topic Modelling techniques from spaCy
- Developed an OCR model for Passports Using TensorFlow to help the HR department get rid of doing manual entries
- Used SAS Enterprise Miner for Data Analysis
- Automated Dummy Test Data Generation for financial data of banks (generally private)

Publications

1. Varshney, A. *et al. Flick Gesture Interaction in Augmented Reality: AR Carrom* in *The Adjunct Publication of the 34th Annual ACM Symposium on User Interface Software and Technology* (2021). https://doi.org/10.1145/3474349.3480229.