Education

DAYALBAGH EDUCATIONAL INSTITUTE | AGRA, INDIA

Bachelor of Technology

Electrical Engineering with Specialization in Computer Science | First Division with Distinction CGPA - 9.152

Relevant Coursework: Neural Networks | Software Design | Digital Image Processing | Design and Analysis of Algorithms | Data Structures | Advanced Programming Labs (Java, C) | Advanced Optimization Techniques | Computer Architecture | Discrete Mathematics | Quantum Computing

Skills

- Programming: Python (PyTorch, Keras, Scikit-learn, NumPy, Pandas, Matplotlib, Seaborn, MoviePy, Librosa, OpenCV, Multithreading) | Java | C | C++ (basic) | MySQL | HTML | CSS
- Deep Learning | Machine Learning: Neural Networks | Autoencoders | CNN | RNN | LSTM/GRU | Transformers | Transfer Learning | K-Nearest Neighbors | Naïve Bayes | Linear & Logistic Regression | Natural Language Processing (BoW, TF-IDF, Word2Vec, GPT) | Data Visualization & Dimensionality Reduction (PCA, SNE, T-SNE)
- Version Control System: Git | GitHub

Experience

RESEARCH INTERN | TORONTO METROPOLITAN UNIVERSITY

Project: "Analyzing User Generated YouTube Videos to Understand Ageing, Old Age, and Older Adults"

- Conducted comprehensive literature reviews, contributing to project understanding and shaping • research methodology.
- Successfully navigated the challenges posed by Google's strict API limitations to gather crucial data • for the project by designing a program utilizing object-oriented programming in Python, which is now being transformed into a data paper.

SOFTWARE DEVELOPER INTERN | KEYSIGHT TECHNOLOGIES

Worked on fixing bugs and errors in C++ for the M8040A, a product used by R&D teams to characterize chips, devices, transceiver modules and sub-components, and gained practical experience in utilizing Git on the command-line and working with Git repositories.

Research Work

CRICS - A CRICKET SCENE DATASET AND CLASSIFIER $oldsymbol{\Theta}$

Intending to author a paper upon project completion (Pytorch | Torchvision | Scikit-learn | OpenCV | OOP Python)

- Created a large dataset from 55 match highlights, refined through Denoising Autoencoder-based semantic Hashing to eliminate redundancy and enhance scene detector model's generalizability.
- Currently working on annotating each frame for detecting objects on the cricket field to aid in commentary generation in a cricket match.

EXTENDING THE MONTY HALL PROBLEM 🖓 📄

(NumPy | Pandas | Matplotlib | Seaborn)

- Created a simulation of The Monty Hall Problem and showed that switching from the original decision always results in a higher number of victories in the case of 3 doors.
- Generalized it to show that if we switch from the original decision each time and if either the total • number of doors or the number of doors opened by the host increases, then the total number of wins tend to increase.

Supervisor: Asst. Prof. Amira Ghenai

JUNE 2022 – AUGUST 2022

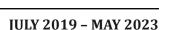
APRIL 2022 - MAY 2022

🕓 🖂 in C

NOVEMBER 2022 – NOVEMBER 2022

JUNE 2023 – PRESENT

Supervisor: Prof. C. Patvardhan



AUTOMATING COMMENTARY GENERATION IN A CRICKET MATCH USING VIDEO ANALYSIS 🗐 🕑 OCTOBER 2022 – PRESENT

Presented in National Systems Conference

Supervisor: *Prof. C. Patvardhan*

(NumPy | Pandas | TensorFlow | Keras | Scikit-learn | Matplotlib | Seaborn | Librosa | MoviePy | OpenCV | Pillow | OOP Python)

- Gathered cricket highlights video data from YouTube and annotated it for the and trained state-of-the-art CNN models to accurately detect scene (pitch, field, miscellaneous), ball, batsman, bowler, bounce, shot-direction and used transfer learning to construct a model using ResNet50 as its backbone to detect hit using the Mel-spectrogram of the audio from the collected video data.
- Currently working on detecting pitch key-points for detecting various other events such as wide ball, no ball, ball length, ball velocity etc.

Conference Presentations

• *'Automating Commentary Generation in a Cricket Match Using Video Analysis'*, Oral Presentation in National Systems Conference 2023, India.

Project Work

- Anime Face Generator Using DC-GAN **O** & VAE **O**
- Overfit Detection In Neural Networks Using t-SNE
- Emotion Detection Using Audio 🧿 📄
- Sentiment Analysis Of Amazon Fine Food Reviews 🔿
- Extensive Study Of T-Sne For Visualization 🔿 🗈
- Highlights Of Developed Algorithms **O**
 - Multithreaded Matrix Multiplication (Java) | Achieved 70% speedup in large matrix multiplication.
 - External Sorting for large files (C) | Achieved a speed of 3MB/second on i7 7th gen.
 - Classical Knight Tour and N Queen Problem in chess using backtracking (C).

Achievements & Interests

• Achievements

- Received MITACS Globalink Research Internship Award conferred by MITACS, Canada (2022)
- Youth Festival (State): Group Singing 4th position
- Drama Festival (Inter University) Best Actor
- Football Team (Inter Faculty) Winner
- Instrumental solo (Inter Faculty) Winner
- National Cadet Corps Captain (High School)
- Volunteer Work
 - Weekly Volunteer in Community Farms
 - Volunteer in National Service Scheme and Unnat Bharat Abhiyan

• Extracurricular Activities:

- Playing Guitar, Piano, and Flute
- Recording Music from Scratch
- Acting, Singing and Reading
- Playing Football, Basketball, Volleyball, and Chess

May 2023 – June 2023 March 2023 – April 2023 December 2022 – December 2022 July 2021 – August 2021 July 2021 – August 2021