Internship Report

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Project : NULLCLASS – DATA SCIENCE-
Learn to Build a Real Time Application for Emotional Detector

Introduction

The internship provided by NullClass aimed to deepen my practical knowledge in real-time computer vision and machine learning. As part of the internship, I was tasked with implementing three real-world applications using machine learning and deep learning models with performance metrics and deadline-bound development.

Background

The internship was conducted after completing the course 'Learn to Build a Real-Time Application for Emotional Detector.' The course equipped me with hands-on skills in OpenCV, CNN-based emotion recognition, and building real-time applications with Python.

Learning Objectives

- Fine-tune deep learning models for image-based predictions.
- Apply facial recognition and emotion detection techniques in real-time.
- Automate tasks using time-controlled execution and file logging.
- Build GUI-based interactive ML applications.
- Use performance metrics such as accuracy, precision, and confusion matrix.

Activities and Tasks

1. Age Detection: Fine-tuned a CNN model on the UTKFace dataset for accurate age classification (accuracy: 87%).
2. Attendance System: Real-time face detection and emotion recognition-based attendance logging between 9:30 AM and 10:00 AM.
3. Sign Language Detection: Hand gesture recognition with GUI, operational only between 6 PM to 10 PM.

Skills and Competencies

- TensorFlow & Keras
- OpenCV
- GUI development with Tkinter
- Model evaluation (accuracy, precision, recall, confusion matrix)
- Data logging and scheduling
- Dataset preprocessing

Feedback and Evidence

All models were trained, validated, and demonstrated within defined operational constraints. GitHub repo includes training notebooks, saved models, requirements.txt, and time-based logic.

Challenges and Solutions

- Challenge: Time-controlled functionality.
  Solution: Used Python?s datetime module.
- Challenge: Dataset limitations for sign language.
  Solution: Created custom dataset using webcam + data augmentation.

Outcomes and Impact

Reinforced independent research skills, real-world model deployment, and project delivery within deadlines. Strengthened practical knowledge in emotional detection and time-sensitive ML applications.

Conclusion

The internship with NullClass has been an insightful experience. It helped translate theoretical knowledge into applied machine learning systems with real-world constraints and user interaction models.