

Project Initialization and Planning Phase

Date	20 June 2025
Team ID	SWTID1749902640
Project Name	Crime Vision: Advanced Crime Classification Using Transfer Learning
Maximum Marks	3 Marks

Proposed solution:

Project Overview:

Objective	The primary objective of this project is to develop an automated, deep learning-based system for detecting and classifying criminal activities in images and video frames. By leveraging convolutional neural networks trained on a diverse dataset of crime-related visuals, the system aims to assist law enforcement in real-time surveillance, crime scene investigation, and forensic analysis, reducing manual effort and improving accuracy.
Scope	This project focuses on building a scalable image-based crime detection model using transfer learning with DenseNet121. The system can classify various criminal activities, such as theft, vandalism, assault, and road accidents, by analyzing visual patterns. It covers training, evaluation, and deployment of the model via a web interface, enabling users to upload images and receive crime predictions. Future extensions may include video stream analysis and real-time alert systems.

Problem Statement:

Description	Crime detection from surveillance footage is still a largely manual process, requiring
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	significant human effort to review and interpret images or videos. This method is time-consuming, prone to human errors, and often fails to scale with increasing amounts of visual data. There is a clear need for an automated solution that can analyze such data accurately and efficiently.
Impact	Implementing an automated crime detection system can significantly improve the speed and accuracy of criminal activity identification. It enhances public safety by providing real-time alerts, supporting law enforcement investigations, and reducing dependence on manual surveillance review. This technology also minimizes the risk of oversight and improves resource allocation in monitoring large-scale video streams.

Proposed Solution

Approach	The proposed solution utilizes deep learning and transfer learning techniques to develop an image classification model capable of detecting various crimes. A pre-trained DenseNet121 model is used as the backbone, which is fine-tuned on a labeled dataset of crime-related images. The system includes preprocessing, training, evaluation, and deployment through a web-based interface to make crime prediction accessible to users.
Key Features	<ul style="list-style-type: none"> • Automated image classification for detecting criminal activities • Utilizes DenseNet121 pre-trained on ImageNet for transfer learning • Supports 14 crime categories including theft, assault, and road accidents • User-friendly web interface for image upload and instant predictions • Deployable with Flask and Ngrok for real-time, accessible testing

Resource Requirements:

Resource Type	Description	Specification/Allocation
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Hardware:

Computing Resources	CPU/GPU specifications, number of cores	e.g., 2 x NVIDIA V100 GPUs
Memory	RAM specifications	e.g., 8 GB
Storage	Disk space for data, models, and logs	e.g., 1 TB SSD

Software:

Frameworks	Python frameworks	e.g., Flask
Libraries	Additional libraries	e.g., tensorflow
Development Environment	IDE, version control	e.g., Jupyter Notebook, Git

Data:

Data	Data Source, size, format	e.g., Kaggle dataset, 10,000 images
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