

Basic Details of the Team and Problem Statement



PSID: KVH009

Problem Statement Title: Advanced CCTV analytics solution

Team Name: Hacked

Team Leader Name: Aaryan Sharma

Institute Code (AISHE): U-0385

Institute Name: Thapar Institute of Engineering and Technology



Problems

- The **lack of real-time information and delayed detection of violent incidents** results in limited situational awareness and delayed response time by law enforcement.
- **Suboptimal resource allocation and inadequate proactive measures** are eroding public's trust in the police department's capabilities.

Solution

- Our goal is to employ Deep Learning modules and CV integrations within CCTV cameras to actively detect **potential violent activities**.
- The camera module will provide us with alerts of violence in public areas which would lead to quick detection thereby, faster response
- Using Temporal Convolutional and Recurrent Network we will generate **report** according to **high, medium** and **low risk**.
- The automated report generated using NLP will help provide optimal human as well as material resources suitable for the setback, also providing video evidence for investigation.
- This approach would cause a potential deterrent in the ferocious crowd, thus spreading a sense of trust among the people.



Technology Stack

Use Cases

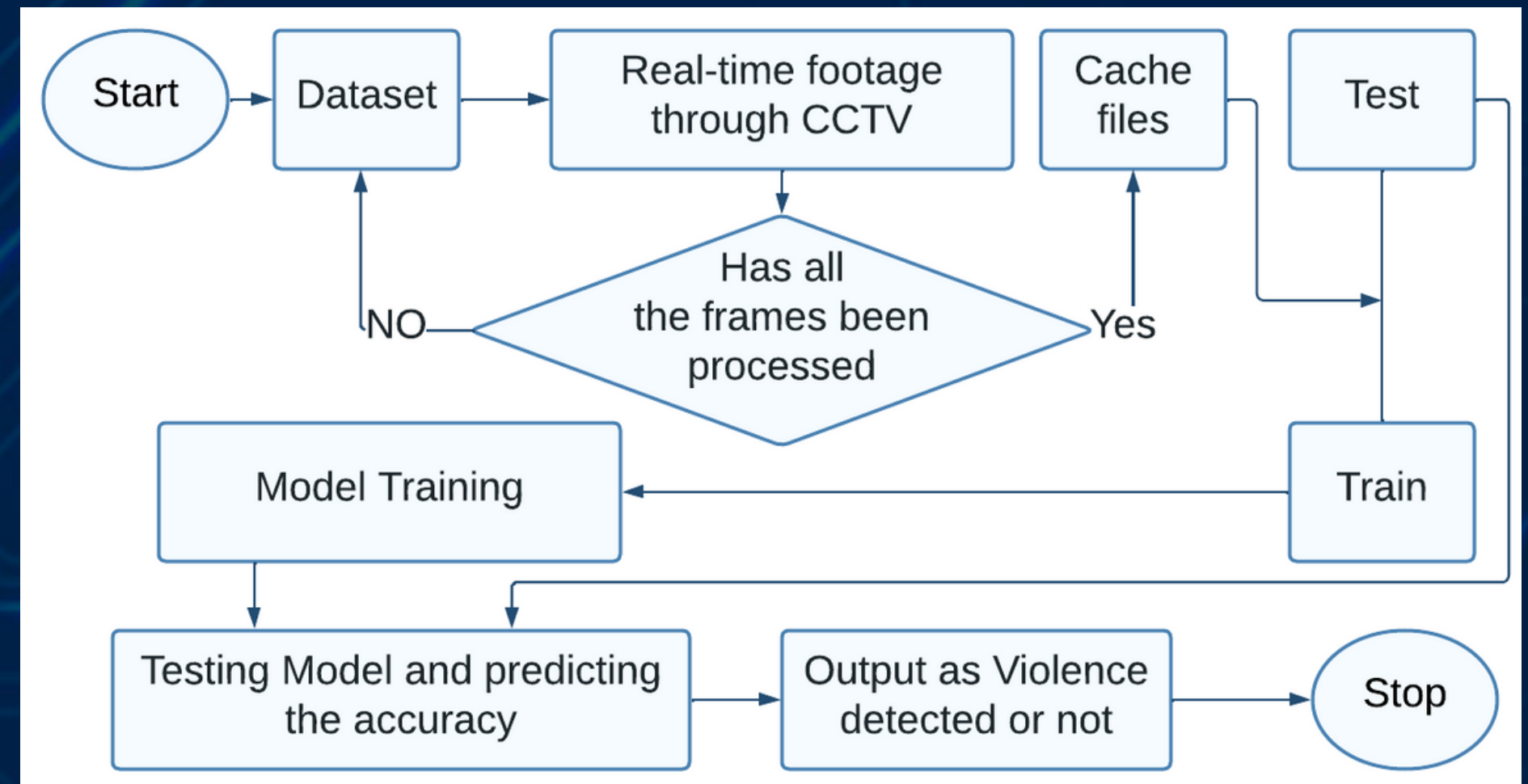
- Real-time alerts for law enforcement agencies when a violent incident occurs, helping quicker help and, thus, faster time to recovery.
- Live Recordings can act as evidence of violence, resulting in successful prosecutions and higher conviction rates.
- Human resources can be allocated based on the threat level detected.
- Reduced officer count for surveillance, and patrolling minimizes the cost and time-to-react for emergencies.
- The alert will contain the coordinates of the event hence notifying the concerned government services nearby.

Dependencies

- Access to high quality CCTV Cameras
- Reliable Internet Connectivity

Show Stoppers

- Using **Facial Recognition** to identify known criminals.
- Generate **Crowd Density Heat Maps** to identify potential trouble spots.
- Detecting visible / partially visible weapons using **Image Segmentation Algorithm**.



Expected flow of data

Team Member Details

Sr. No.	Name of Team Member	Branch (Btech/Mtech/ PhD etc):	Stream (ECE, CSE etc):	Year	Position in team (Team Leader, Front end Developer, Back end Developer, Full Stack, Data base management etc.)
1	Aaryan Sharma	B.E.	CSE	Third Year	Team Leader
2	Panshul Saxena	B.E.	CSE	Third Year	Front End Development
3	Chiranjeev Singh	B.E.	CSE	Third Year	Machine Learning
4	Sahaj Srivastava	B.E.	CSE	Third Year	Backend and Database Management
5	Parth Vohra	B.E.	CSE	Third Year	ML and Documentation
6	Drishti Bhatia	B.E.	CSE	Third Year	Database Management and ML

Team Mentor/s Details

Sr. No.	Name of Mentor	Category (Academic/Industry):	Expertise (AI/ML/Blockchain etc):	Domain Experience (in Years)
1	Dr Deepak Kumar Dewangan	Academic	Deep Learning, Computer Vision	4