

DESCRIPTION OF FEATURES

Identification of known facilitators:

- People are identified using YOLO_v4.
- The known facilitators (employees) will be stored.
- Identified people are crosschecked with known facilitators list.
- If person is present in that list they are marked as a known facilitator.

Identification and tracking of customers:


- People are identified using YOLO_v4.
- People not in the list of known facilitators will be marked as customers.
- Each marked customer will be given an Id no.
- The sentiment of customer is determined using HAAR.

Time spent by customer in premises:

- The time spent by customer is tracked till customer leaves the premises
- The list of customers in premises along with time spent will be displayed in the web interface
- The time spent by customer will be displayed along with id number
- If a customer has spent a lot of time in the premises they are marked for 'Additional assistance required'

User Interface:

- Browser interface.
- CCTV footage will be streamed to the webpage.
- Supports more than one camera feed.
- Status messages, manpower management messages will be displayed here.
- List of customers in premises along with total time spent in the premises will be displayed.
- Customers with most time spent will be shown at the top of the list.
- Customers marked as 'Additional assistance required' will be shown.



MESSAGES

- Suspicious act of customer id 239
- Detected crowd in counter 2
- Assistance required by customer 218 in waiting area

FLOOR DETAILS	VEHICLE		CUSTOMERS	
	ID	TIME	ID	TIME
Area name : Parking Lot	ND455	30:00	218	32:10
No of vehicles : 6	LGD121	29:37	224	30:52
Floor Status : BUSY	CA1212	26:14	226	28:36
No of counters : null	3E 457	24:07	231	26:08
No. of Peoples : 6	WSA 254	17:44	239	19:17
	SDA 478	12:21	254	15:25

Status of the room:

- This shows whether the bank floor is idle\busy\crowded.
- This helps establish trends on the peak hours of bank for better resource management.

Counter management:

- Incase only one counter is currently open, but the number of customers in the queue keeps increasing.
- Then a message will be sent to the web interface suggesting that another counter should be opened.
- The bank\floor manager can then take necessary measures.

License plate recognition (ALPR):

- Recognizes license plates of vehicles parked in the vicinity of the building using OCR (Optical Character Recognition)
- If there is a robbery/event that threatens the security of the bank then the license plates of the vehicles at the time of the incident are noted and sent to the police.
- Notes the time spent by each vehicle in the parking lot(will be shown in the user interface)

Recognition of suspicious elements:

- The police will be notified if people are detected holding weapons
- People who loiter next to areas marked as secure will be marked as suspicious
- Customers/People entering the bank floor with their whole face covered will be marked as suspicious
- People attempting to enter the premises after working hours will be marked as suspicious
- SMS and WhatsApp messages will be sent to the manager asking to review footage.
- If footage is deemed suspicious the police will be called to the bank premises

Feedback mechanism for false positives:

- The manager can mark the time period with false positives
- Further the manager can select area in video where false positive occurred.
- Marked footage will be reviewed and data will be prepared to better train the model.