DETECTING OF PEOPLE ABANDON OBJECTS IN A CONTROLLED AREA USING COMPUTER VISION

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INTRODUCTION

The recognition of human activities in controlled area is an important issue for surveillance systems to keep pedestrians safe from tripping, crowding and overcrowding.
This study will 1) help in automating the surveillance systems by presenting a framework to detect abandonment event, using computer vision, in different scenarios. 2) Evaluate the impact of the volume of object and the number of people in the detection process through using star skeleton carried object model.
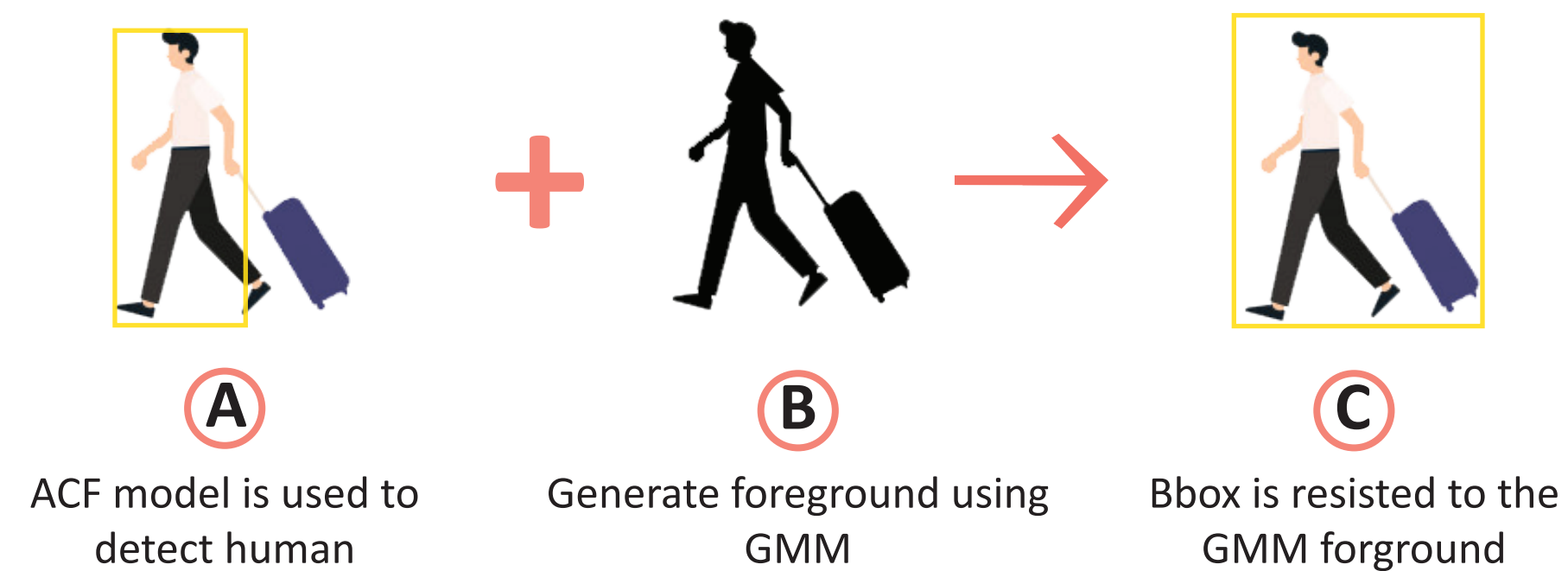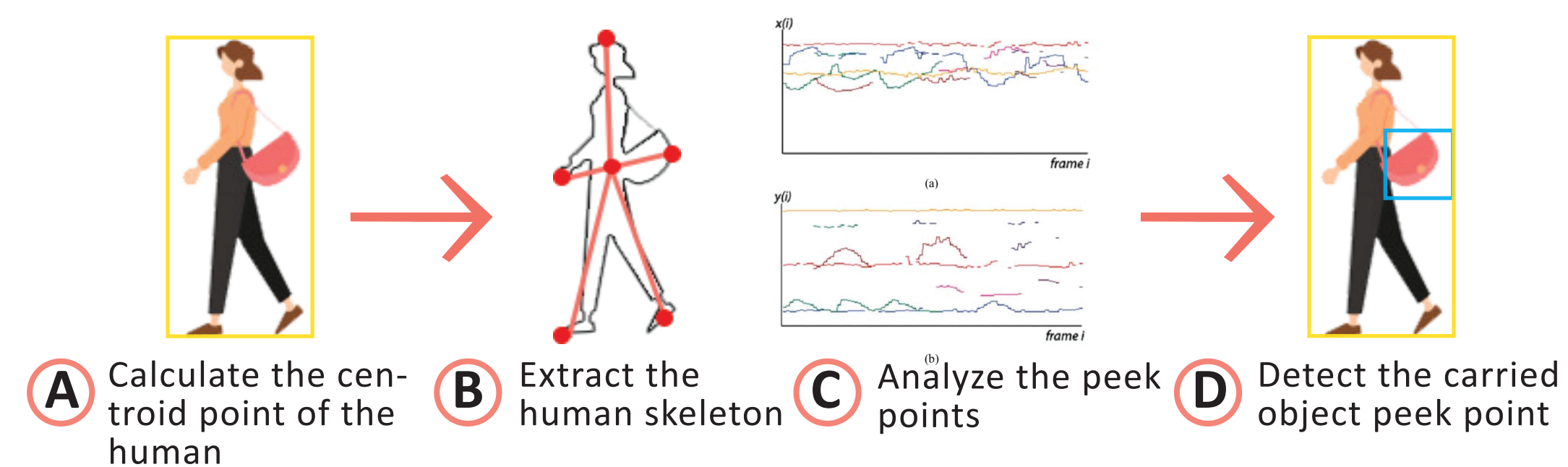
Framework design
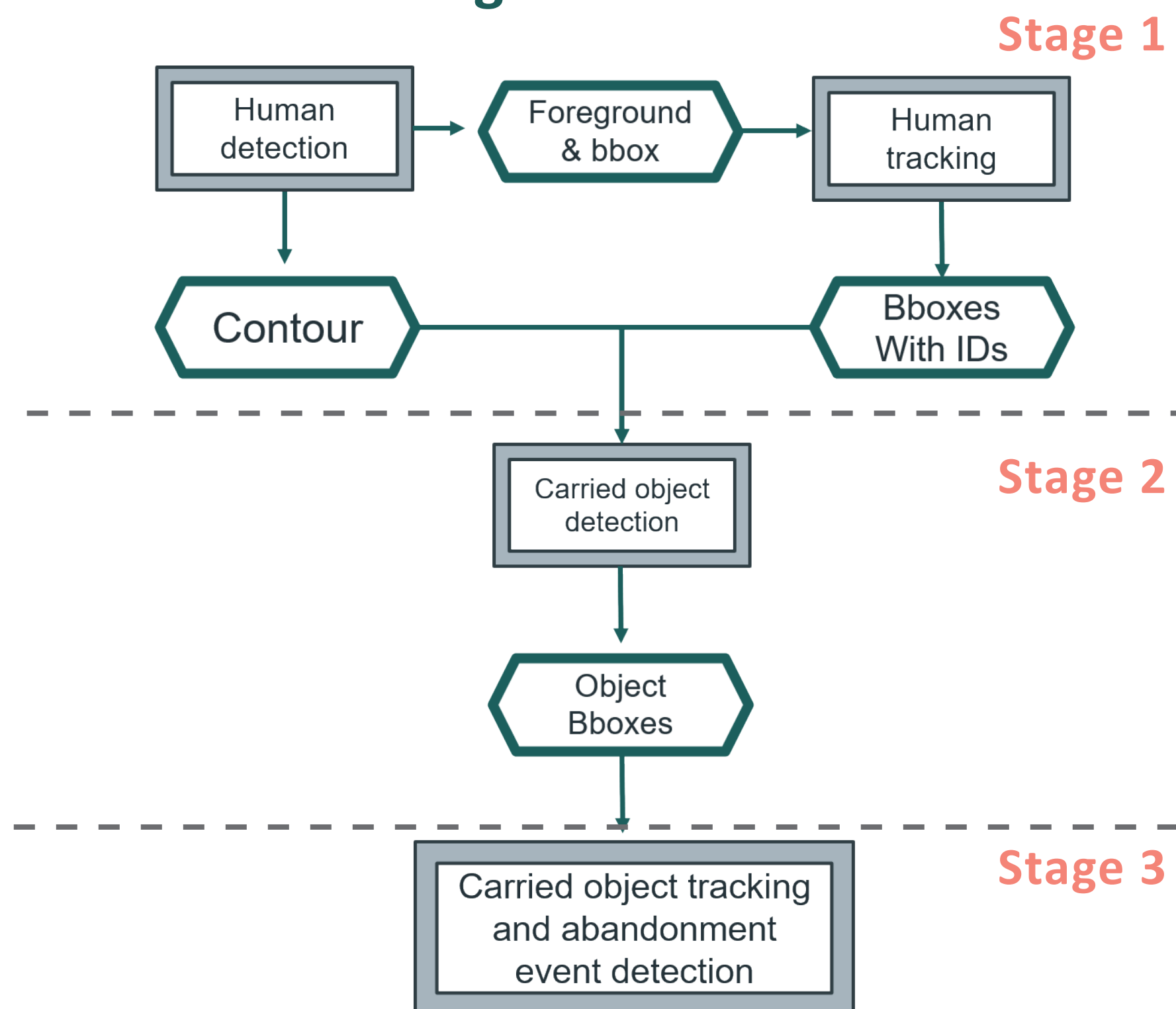
ABdetect DATASET

	Video Name						
	1S0	**1L0**	**1M0**	**1M1**	**2M1**	**2M0**	**2N0**
Number of people	1	1	1	1	2	2	2
Size of carried object	S	L	M	M	M	M	M
Abandonment exist?	No	No	No	Yes	Yes	No	No

METHODOLOGY

Stage 1: Human detection

A ACF model is used to detect human

B Generate foreground using GMM

C Bbox is resisted to the GMM forground

Stage 2: Carried object detection

A Calculate the centroid point of the human

B Extract the human skeleton

C Analyze the peek points

D Detect the carried object peek point

Stage 3: Tracking and abandonment event detection

A Extract the object features and match objects in frames based on correspondence.

B Detect the abandonment event by check the overlapping between the owner's and object's bboxes.
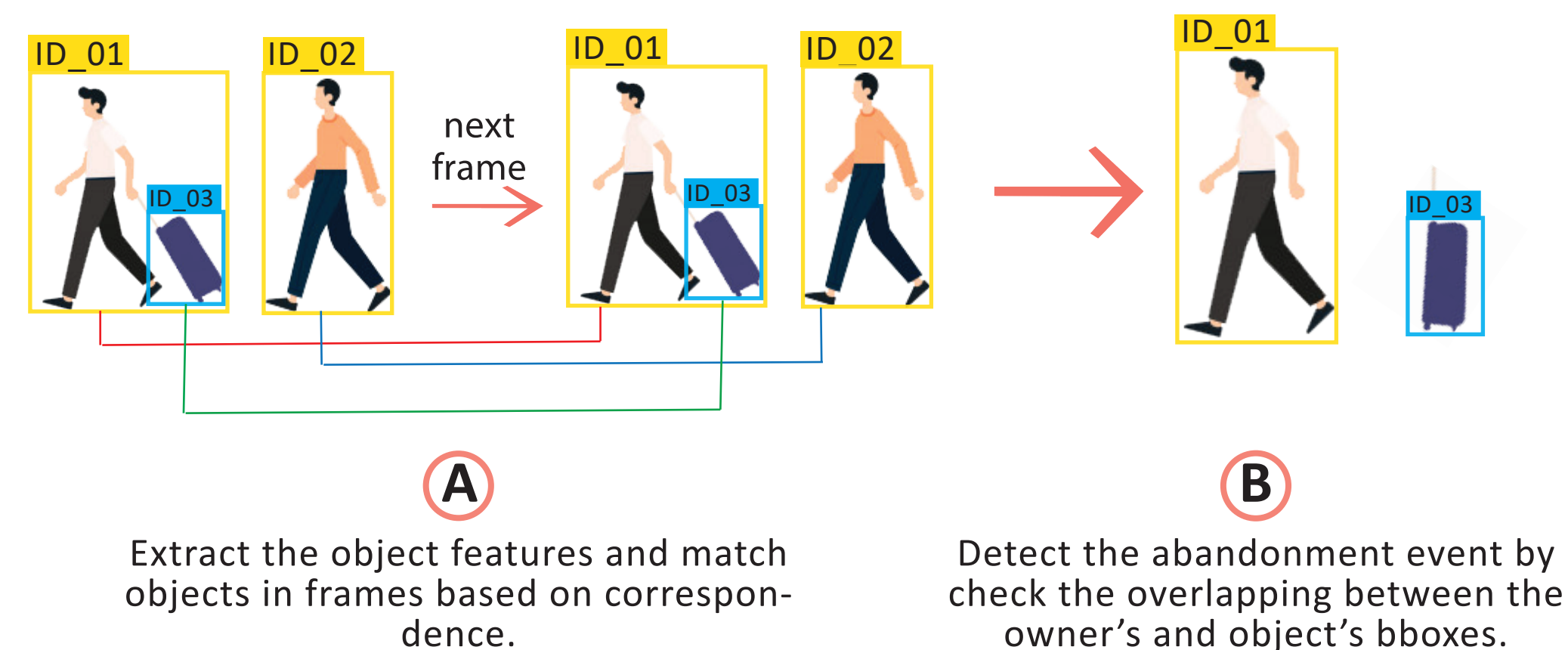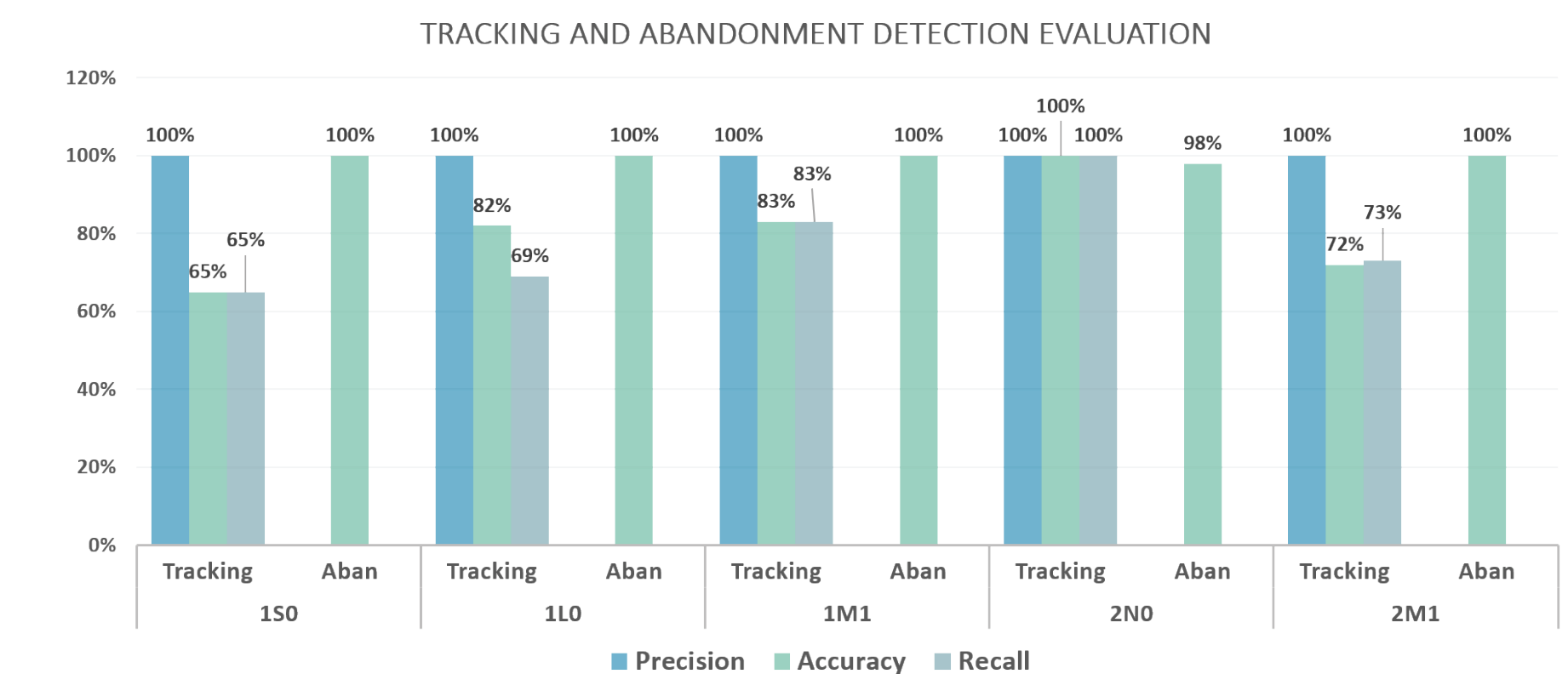
EVALUATION

This chart shows the recall, precision and miss rate of the human and carried object detection models for each recorded video.
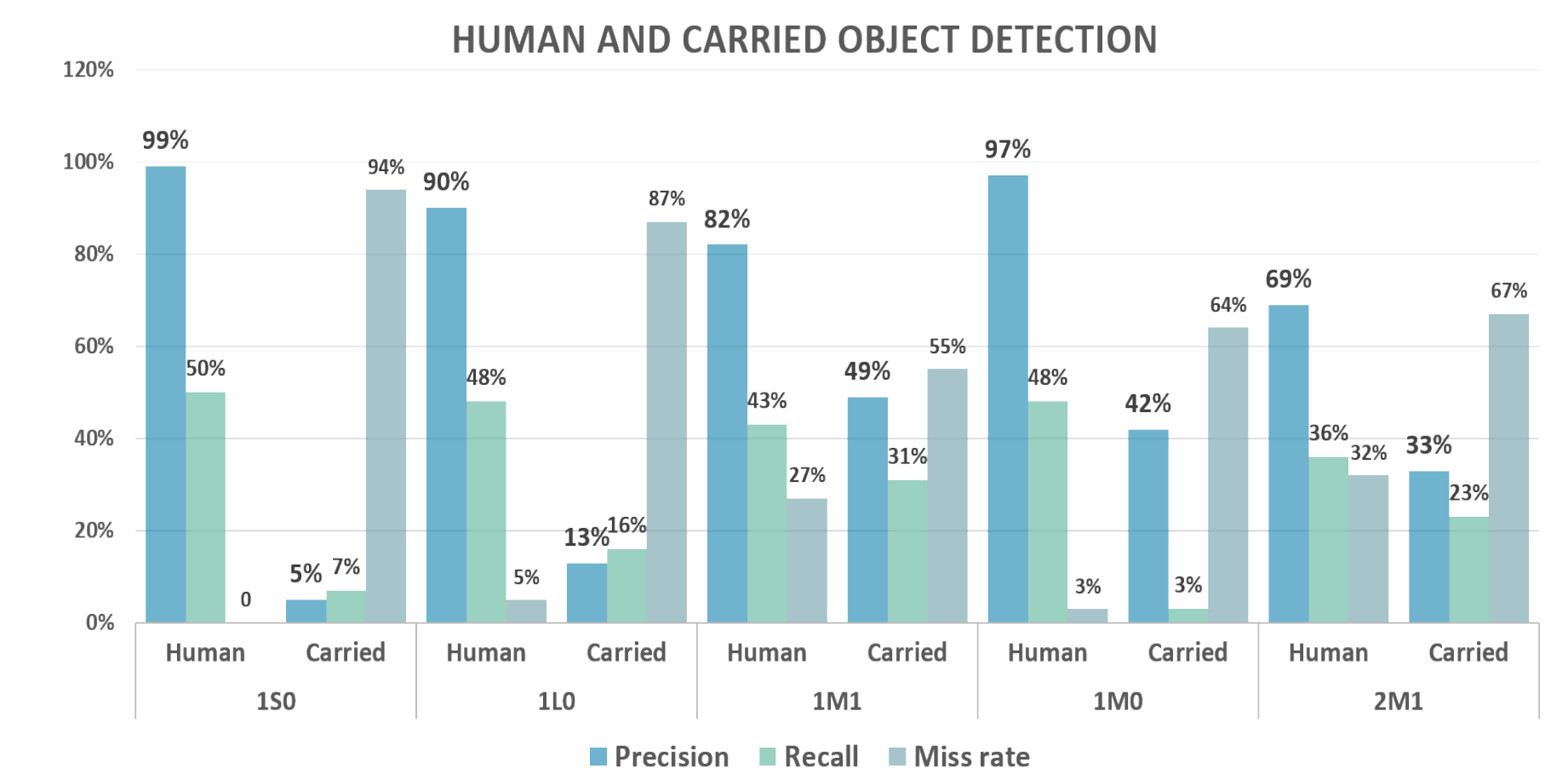
This chart shows the recall, precision and accuracy of object tracking and abandonment detection models for each recorded video.

CONCULSION

- Tracking carried objects is mainly affected by the recall at the carried object detection model not with precision.
- This mean carried object detector that accept more objects are carried one (including most of the true objects) is preferable for tracking.
- Carried object detection performed better for medium sized objects and consequently tracking.
- Abandonment relies on the precision of the tracker.