

# **EMBEDDED VISION AND LOW POWER GROUP**

Pushyami Rachapudi

Team Lead, CAM2

Purdue University



# **Person Re-Identification in a distributed smart camera system**





**PURDUE**  
UNIVERSITY®



**PURDUE**  
UNIVERSITY®



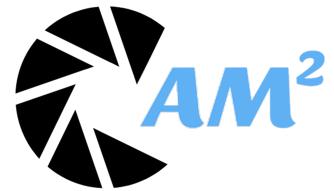
**PURDUE**  
UNIVERSITY®



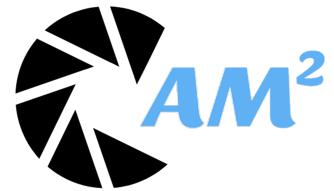
**PURDUE**  
UNIVERSITY®



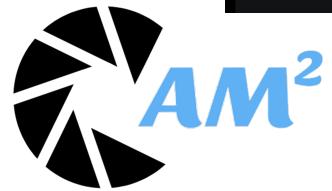
**PURDUE**  
UNIVERSITY®



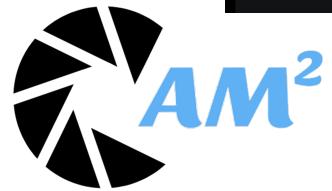
**PURDUE**  
UNIVERSITY®



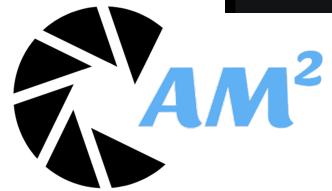
**PURDUE**  
UNIVERSITY®



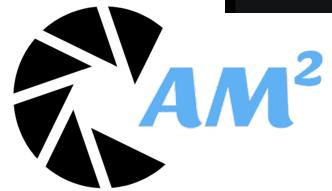
PURDUE  
UNIVERSITY®



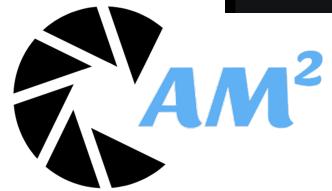
PURDUE  
UNIVERSITY®



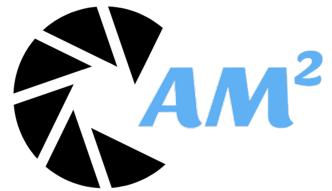
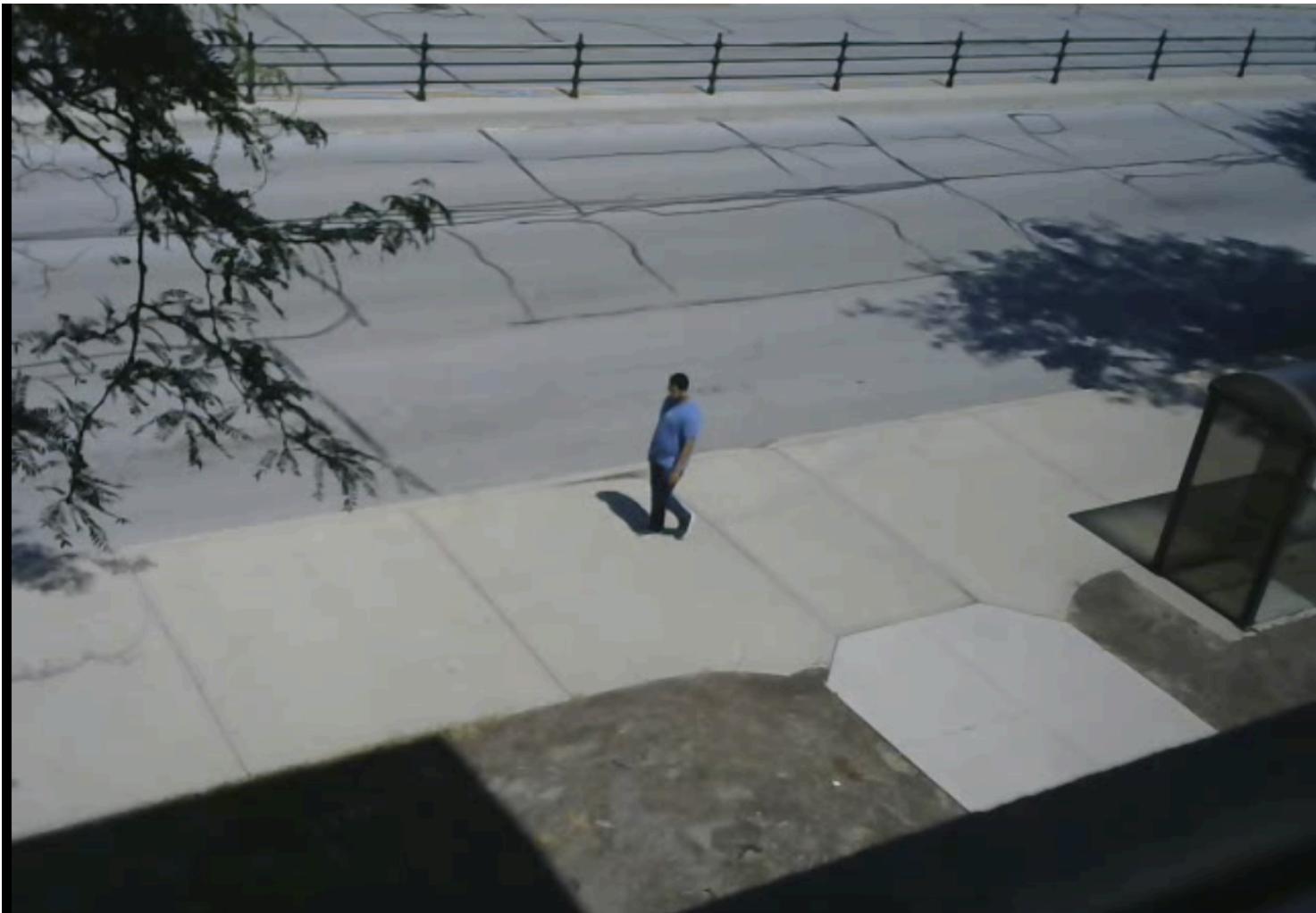
PURDUE  
UNIVERSITY®



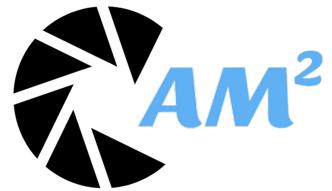
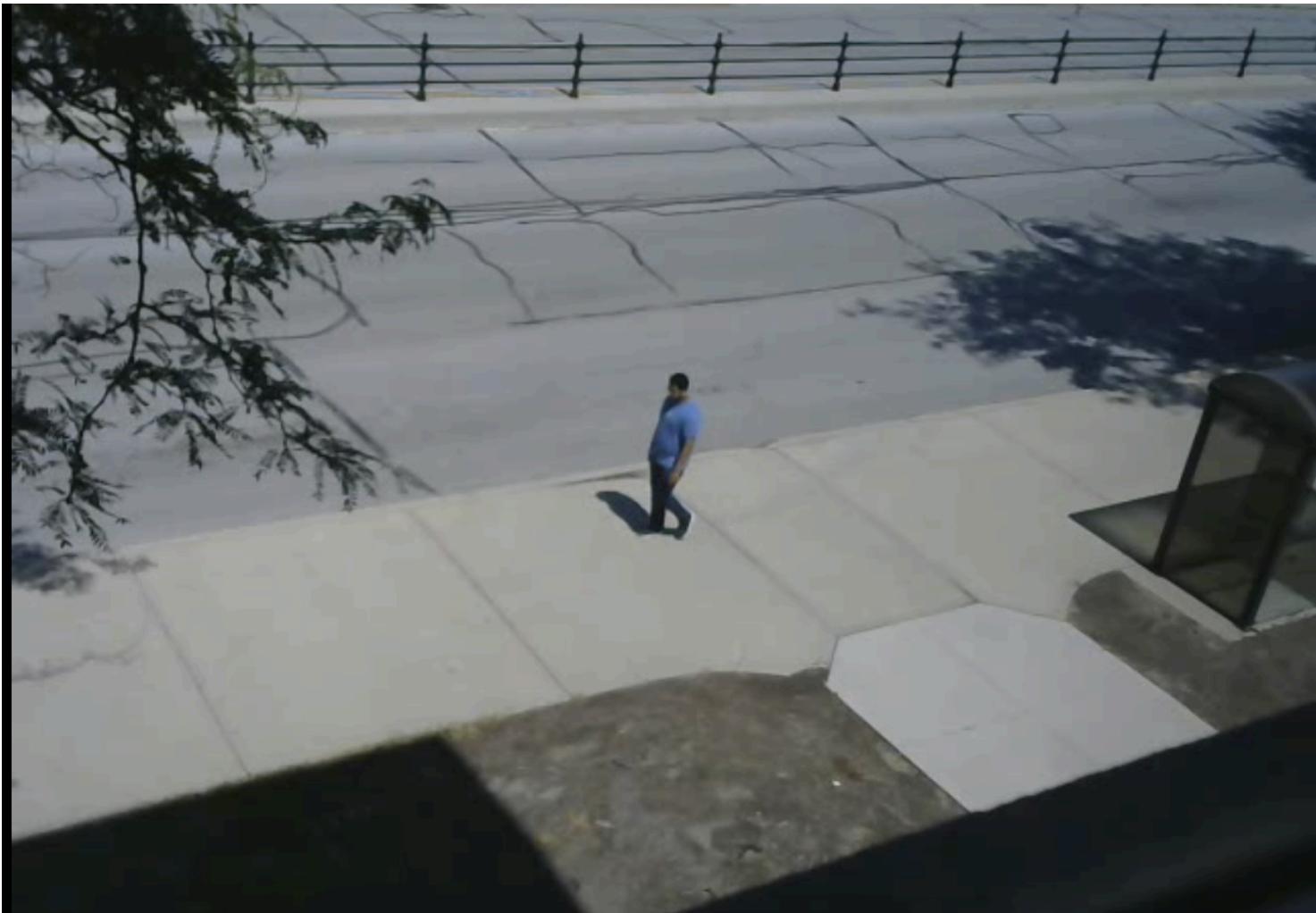
PURDUE  
UNIVERSITY®



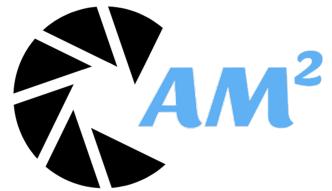
PURDUE  
UNIVERSITY®



**PURDUE**  
UNIVERSITY®



**PURDUE**  
UNIVERSITY®



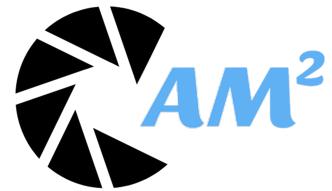
**PURDUE**  
UNIVERSITY®



**PURDUE**  
UNIVERSITY®



TRIGGER



PURDUE  
UNIVERSITY®



→ TRIGGER

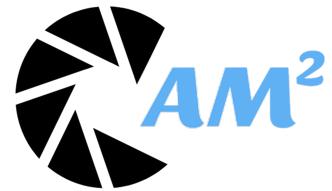
Yolo tiny	HOG + SVM	BG Sub
Does not detect	Too slow	✓



PURDUE  
UNIVERSITY®



**PURDUE**  
UNIVERSITY®



**PURDUE**  
UNIVERSITY®



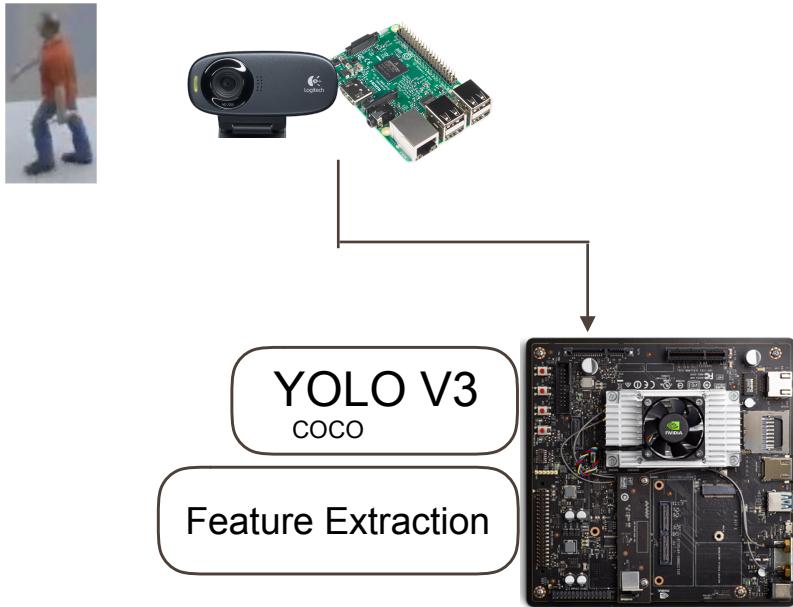
Nvidia TX2

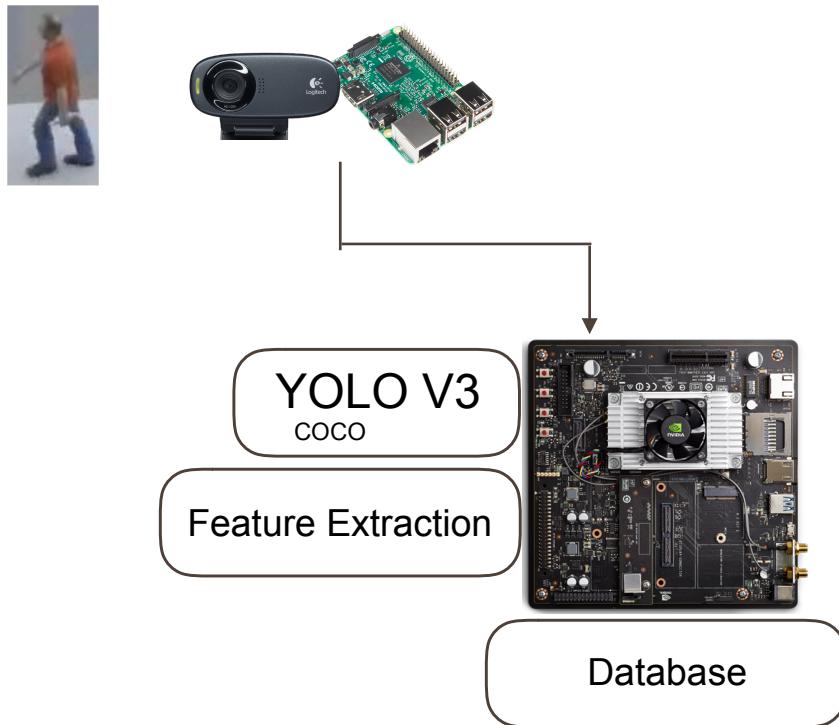


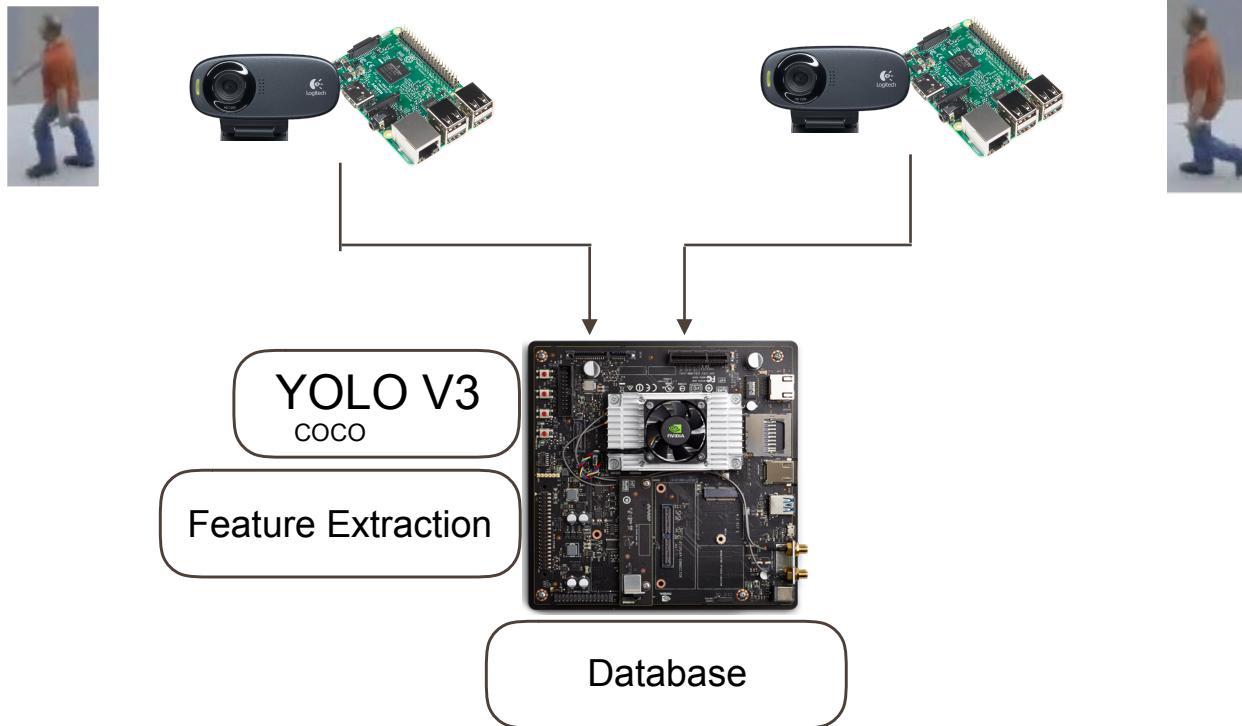
YOLO V3  
coco

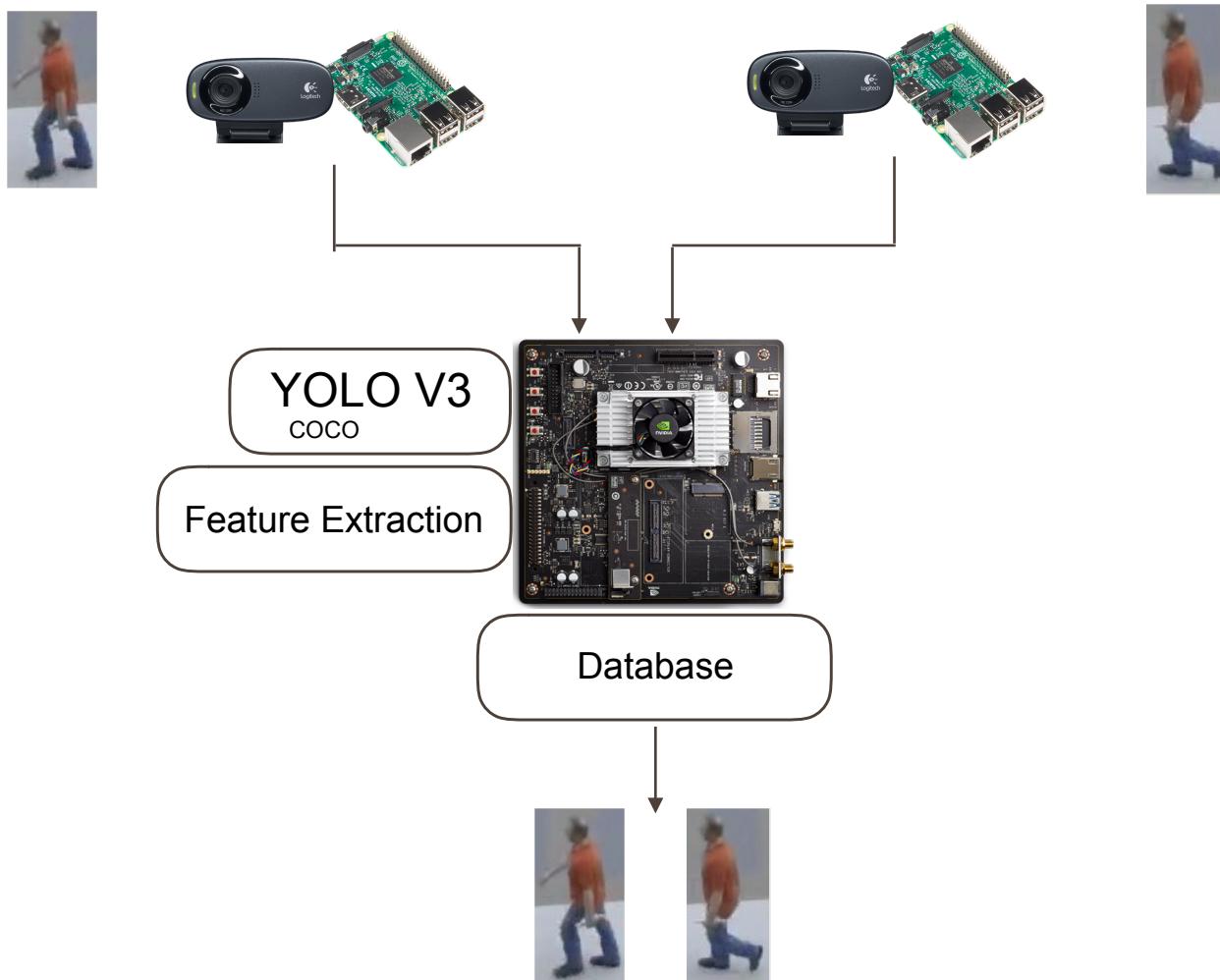


PURDUE  
UNIVERSITY®









Similarity = **89.62%**

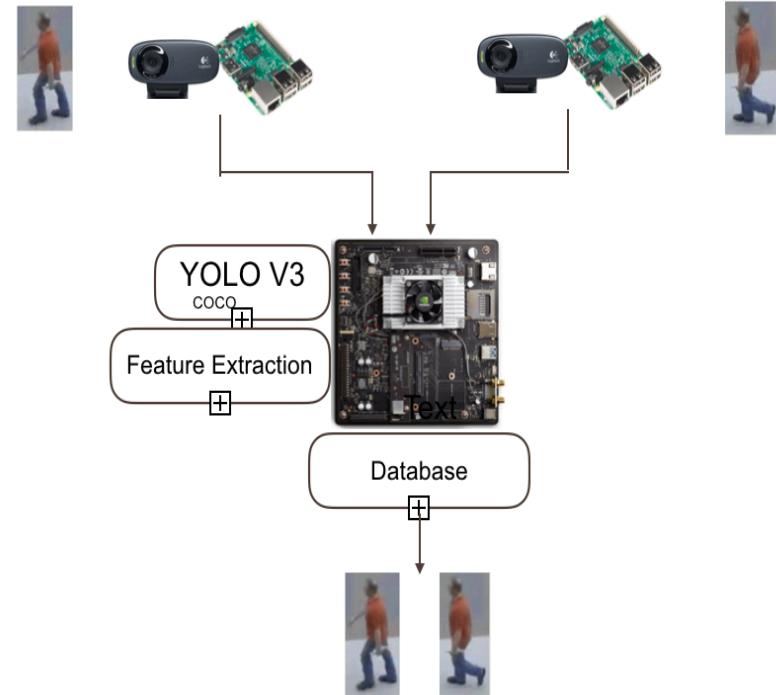


# **Implementation and Issues**



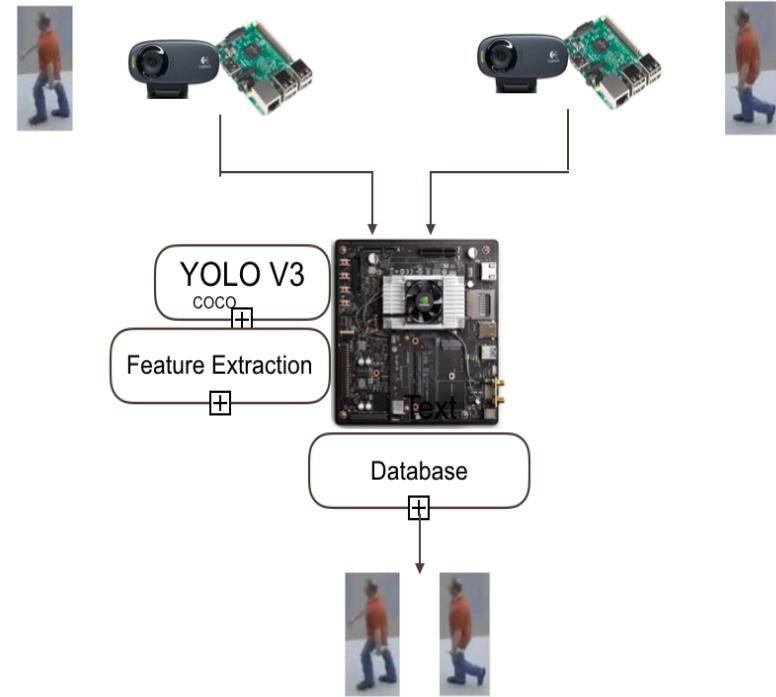
# Implementation and Issues

## 1. Trigger



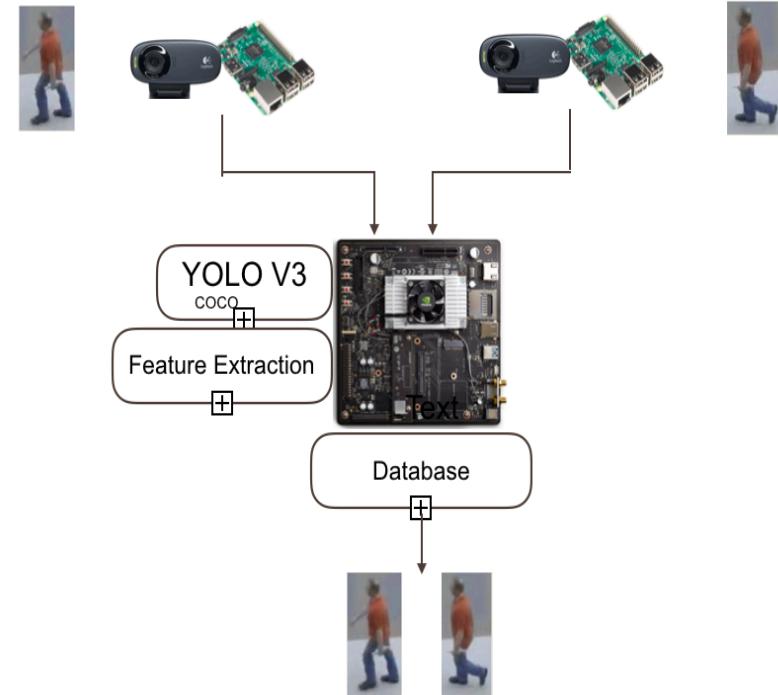
# Implementation and Issues

1. Trigger
2. Integration: Trigger + Yolo



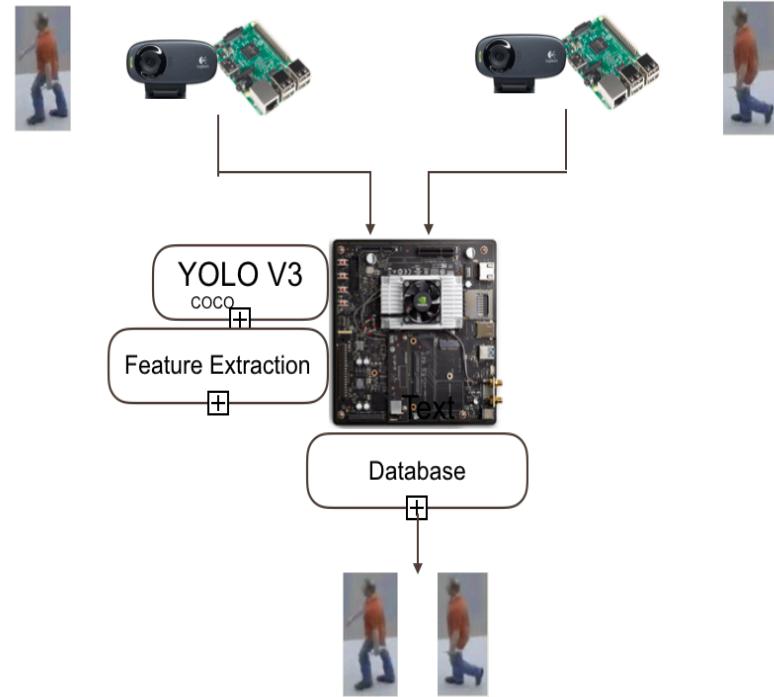
# Implementation and Issues

1. Trigger
2. Integration: Trigger + Yolo
3. Yolo



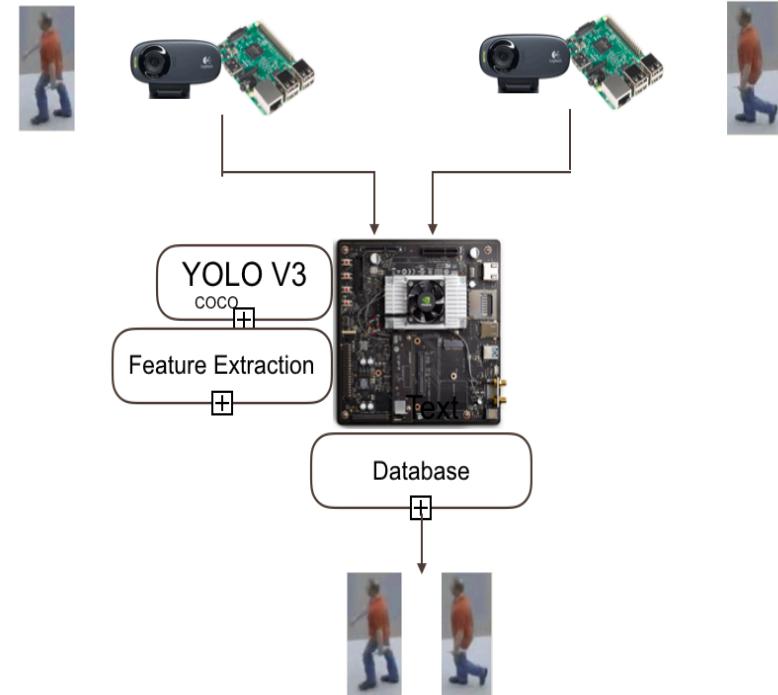
# Implementation and Issues

1. Trigger
2. Integration: Trigger + Yolo
3. Yolo
4. Integration: Yolo + Feature Extraction



# Implementation and Issues

1. Trigger
2. Integration: Trigger + Yolo
3. Yolo
4. Integration: Yolo + Feature Extraction
5. Database



# Kd TREE Vs LSH



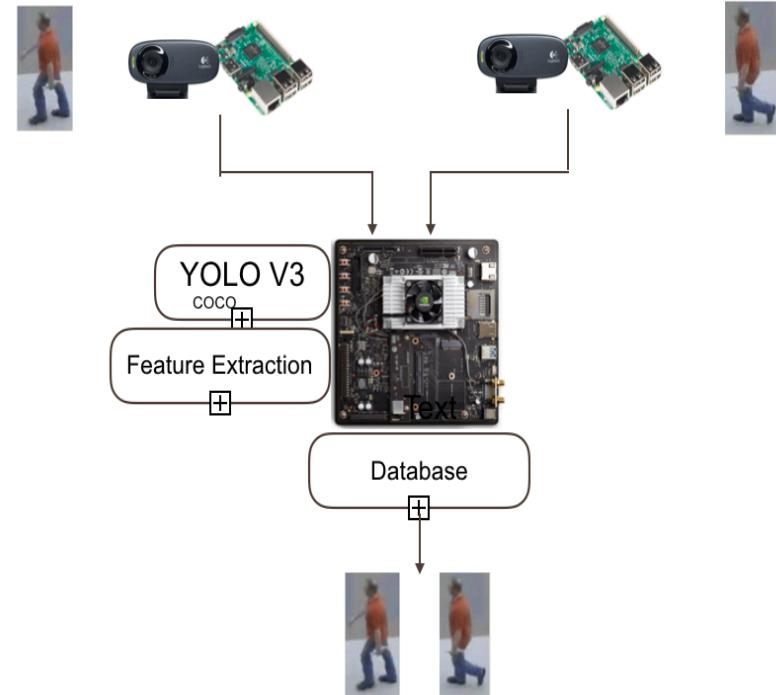
## Kd TREE Vs LSH

$n$	kD Tree (s)	LSH (s)
50	0.020974	0.044184
100	0.089230	0.085083
200	0.472756	0.247437
500	3.518683	0.603336
1000	19.387651	1.491773
5000	8.173680	300.432561



# Implementation and Issues

1. Trigger
2. Integration: Trigger + Yolo
3. Yolo
4. Integration: Yolo + Feature Extraction
5. Database
6. Verification



# Results



95.25%



50.58%



62.78%



69.81%



46.93%

# Future Work



# Future Work

1. Experiments on the client node.
2. Improved Signature for an object : Gait recognition
3. Database: Repeatability
4. Better verification techniques



# Questions?

