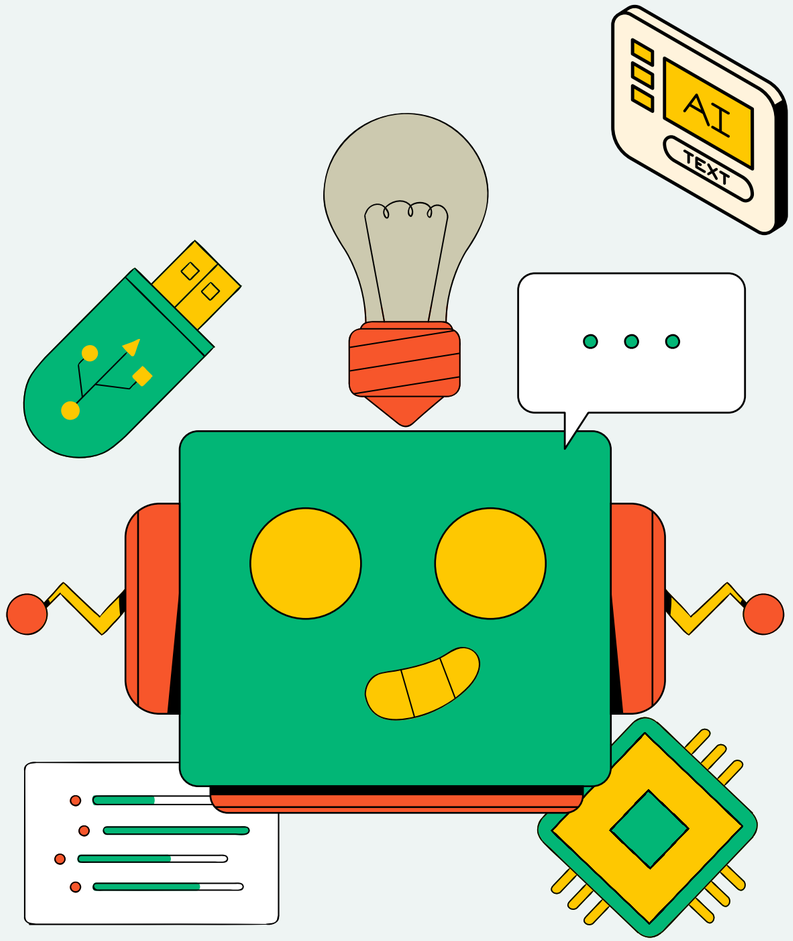
COMPSCI5086P

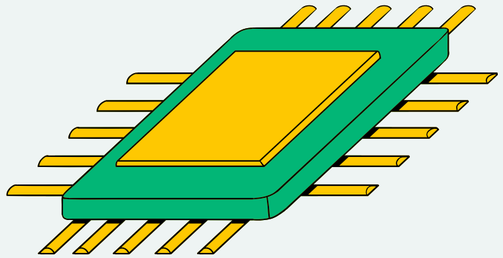


LITERATURE REVIEW THESIS

PRESENTATION

PRESENTED BY:

GAGAN DESHAD

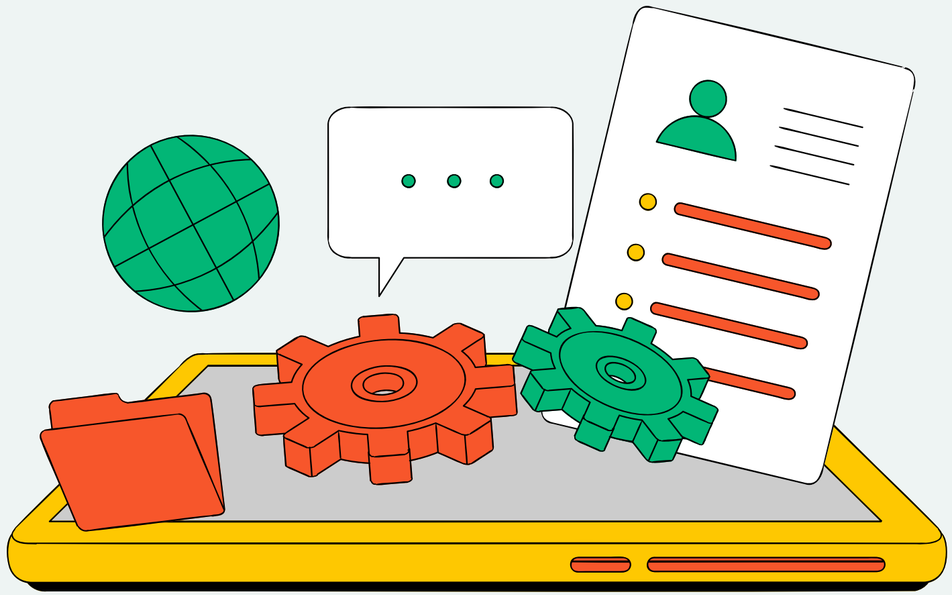


PRESENTATION OUTLINE

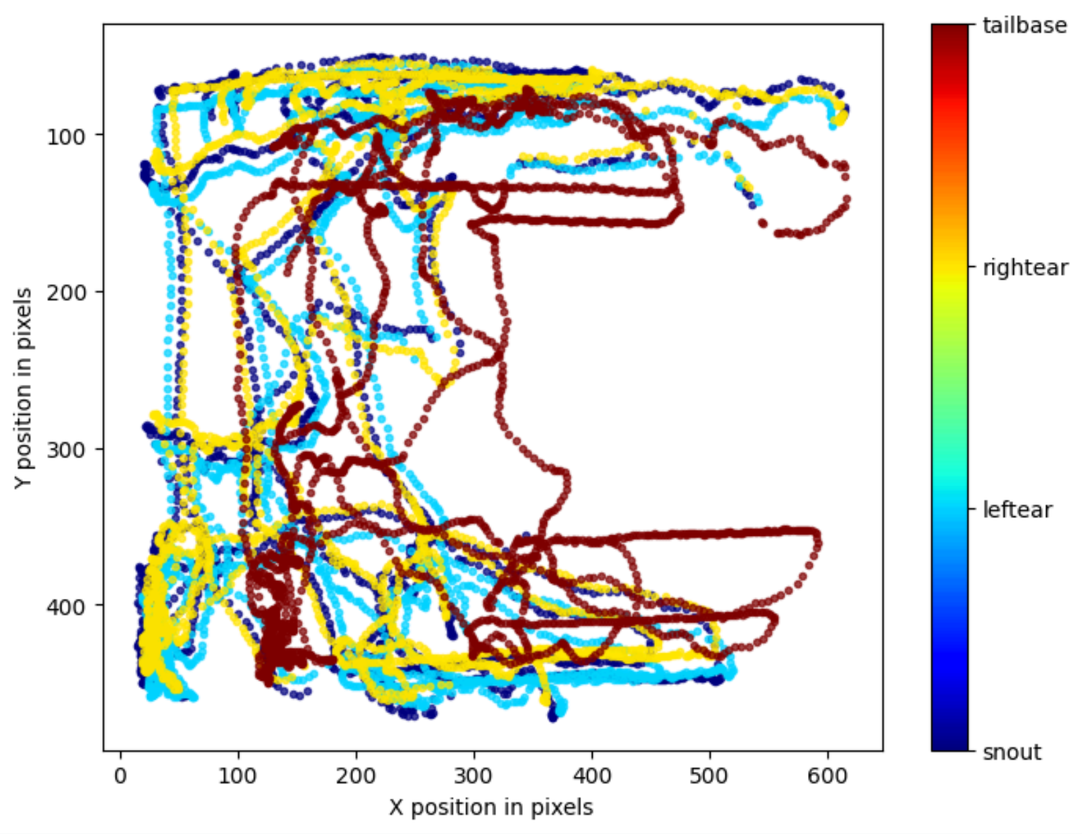
- Introduction
- Deep Lab Cut
- Behavioural Papers
- Models
- YoloV8n
- MobileNet-SSD
- EfficientNet-B0
- YOLOX+BoT-SORT-Slim
- VGG+CNN
- VGG+CNN+LSTM
- R-CNN + NAS
- Acceleration based-ACT4Behav

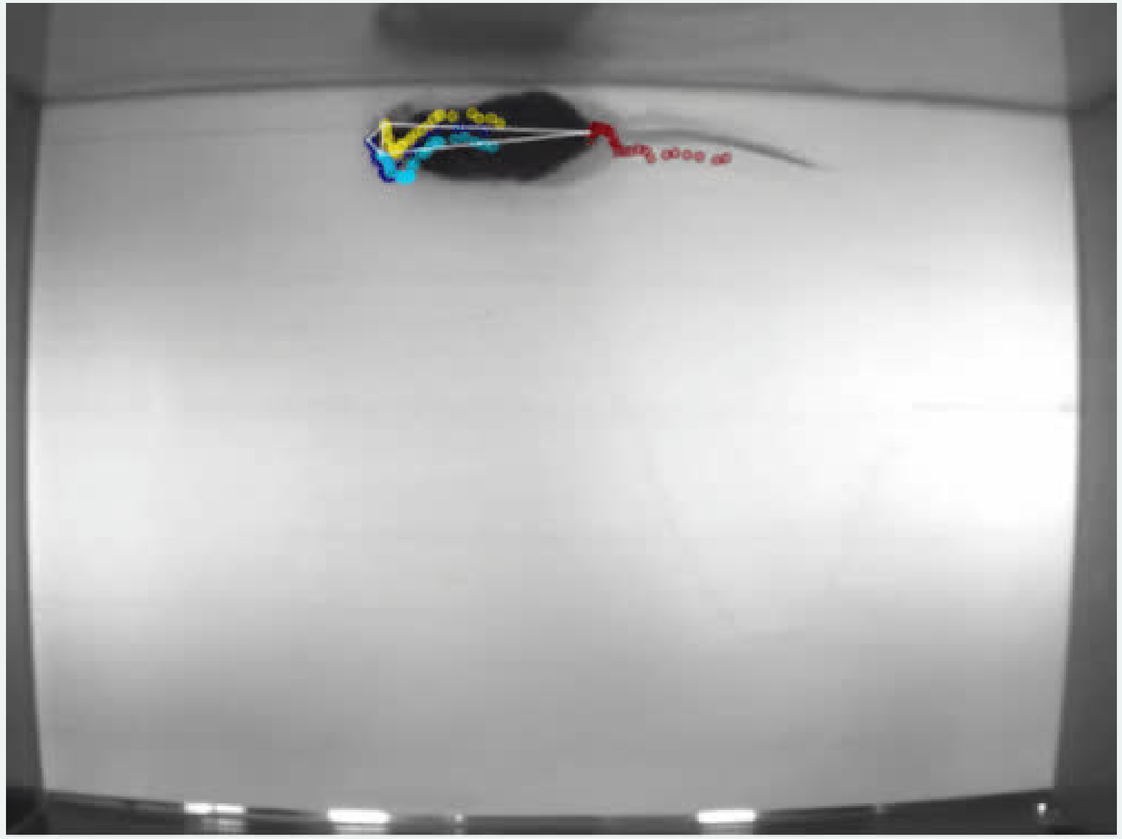
TYPES OF DETECTION?

- Weight Detection
- Posture
- Behaviour

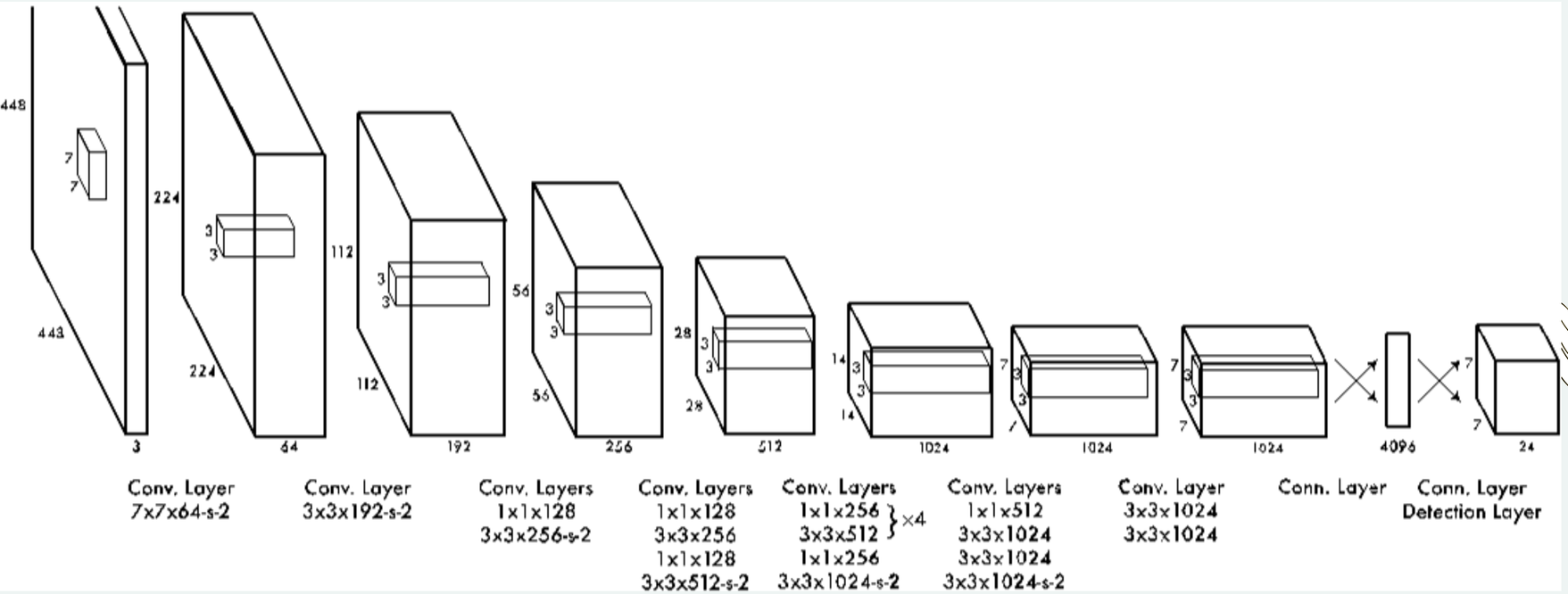


DEEP LAB CUT


tailbase
rightear
leftear
snout
Y position in pixels
X position in pixels
100
200
300
400
0
100
200
300
400
500
600

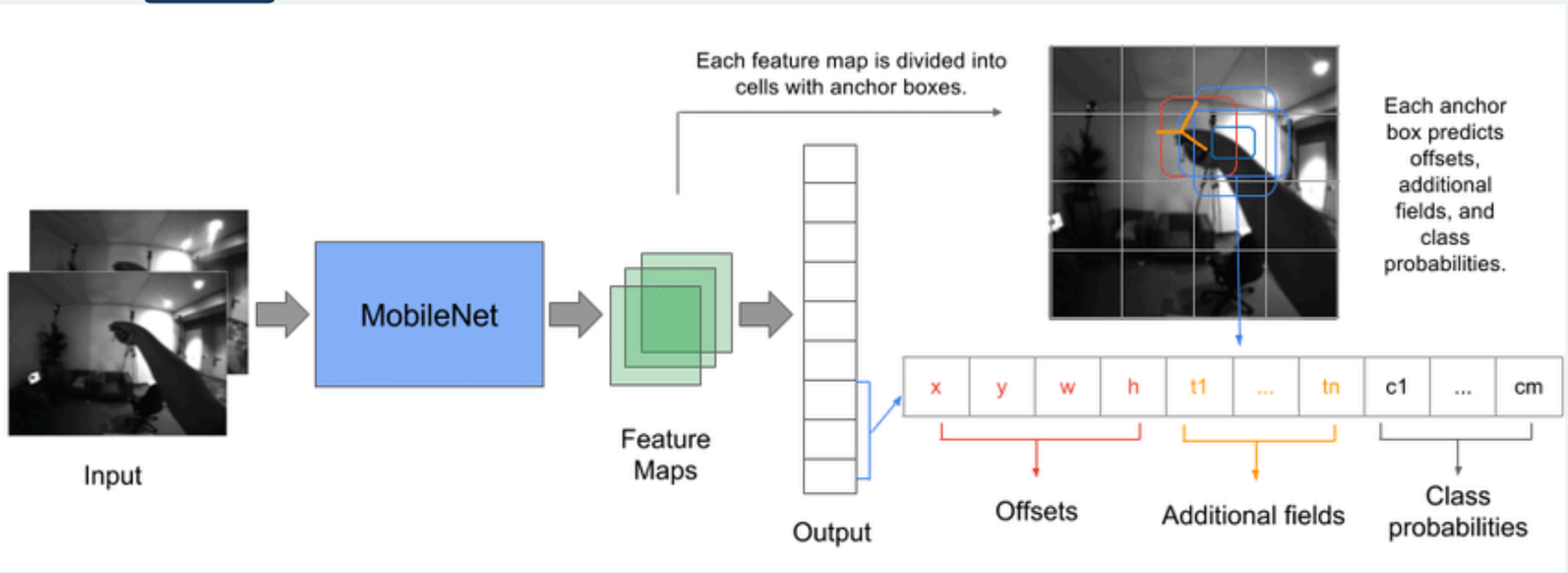


YOLOV8N



- One-stage detector: Processes the entire image in one pass.
- Real-time performance: Very fast and suitable for applications like video surveillance or robotics.
- Single neural network: Directly predicts bounding boxes and class probabilities.

MOBILENET-SSD

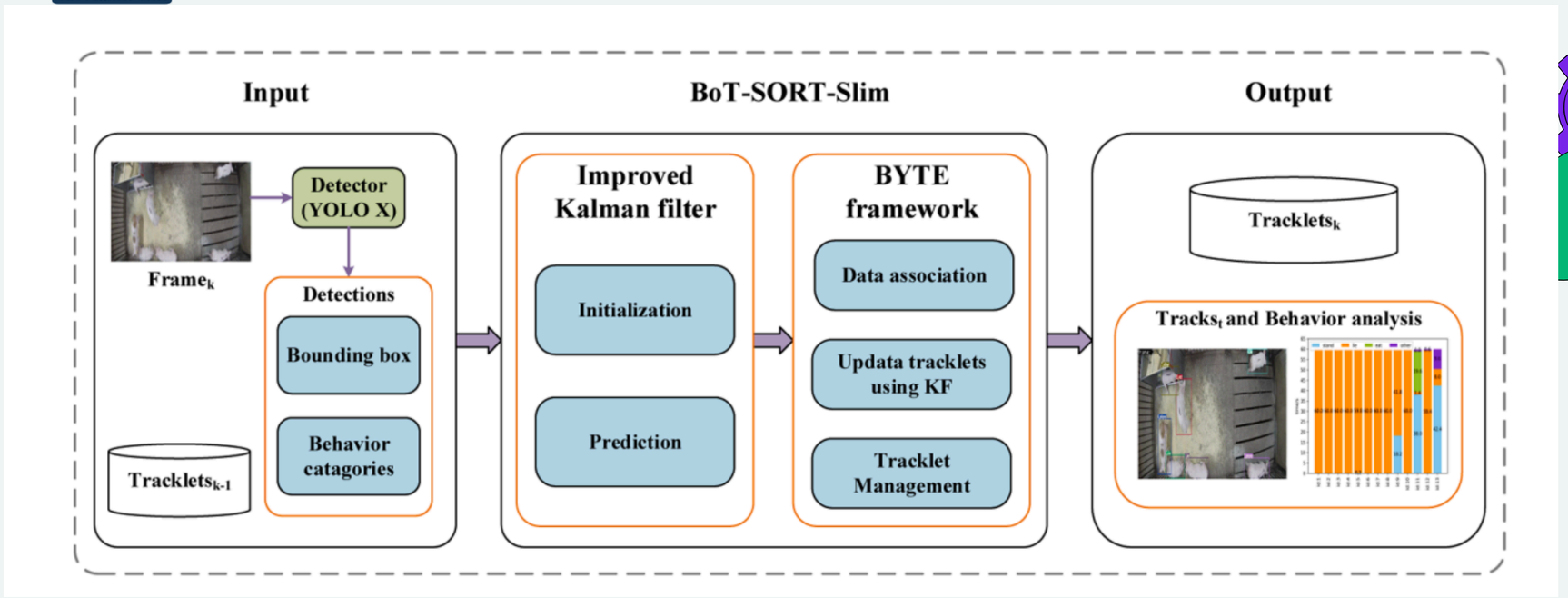


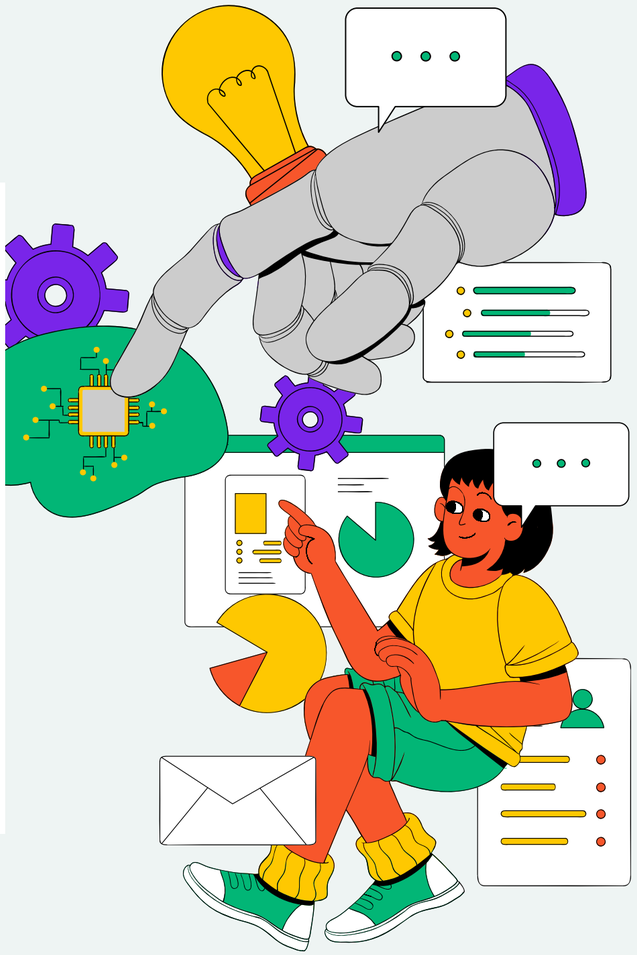
- One-stage detector: Uses the SSD (Single Shot Detector) framework.
- Backbone: MobileNet – a lightweight CNN optimized for mobile and edge devices.
- Efficiency: Designed for low-latency and low-power devices.

EFFICIENTNET-B0

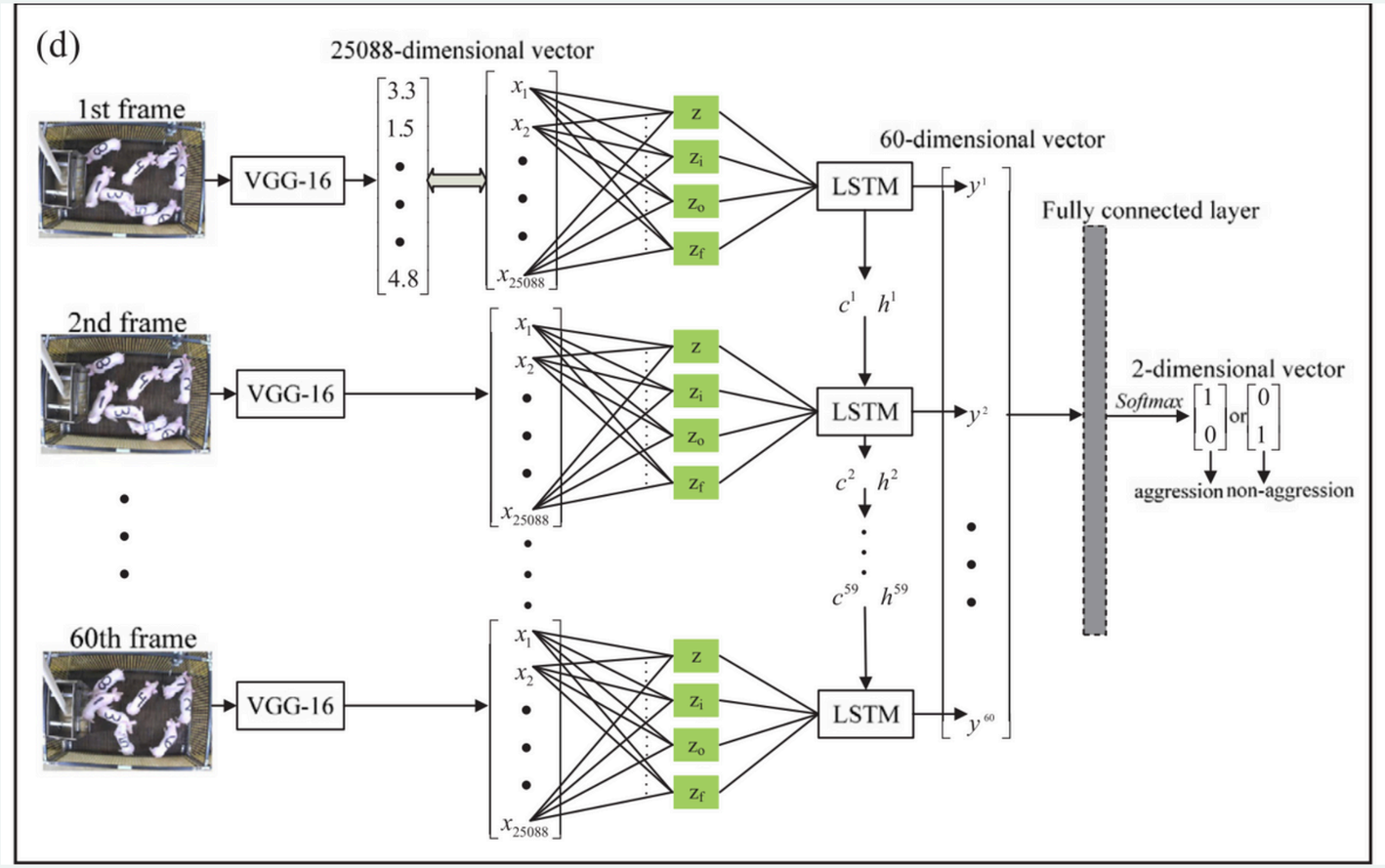
- Key idea: Uses a compound scaling method to balance network depth, width, and resolution for better efficiency.
- Architecture: Based on Mobile Inverted Bottleneck Convolution (MBConv) blocks, like in MobileNetV2.
- Baseline model: EfficientNet-B0 is the smallest and fastest model in the EfficientNet family.

YOLOX+BOT-SORT-SLIM

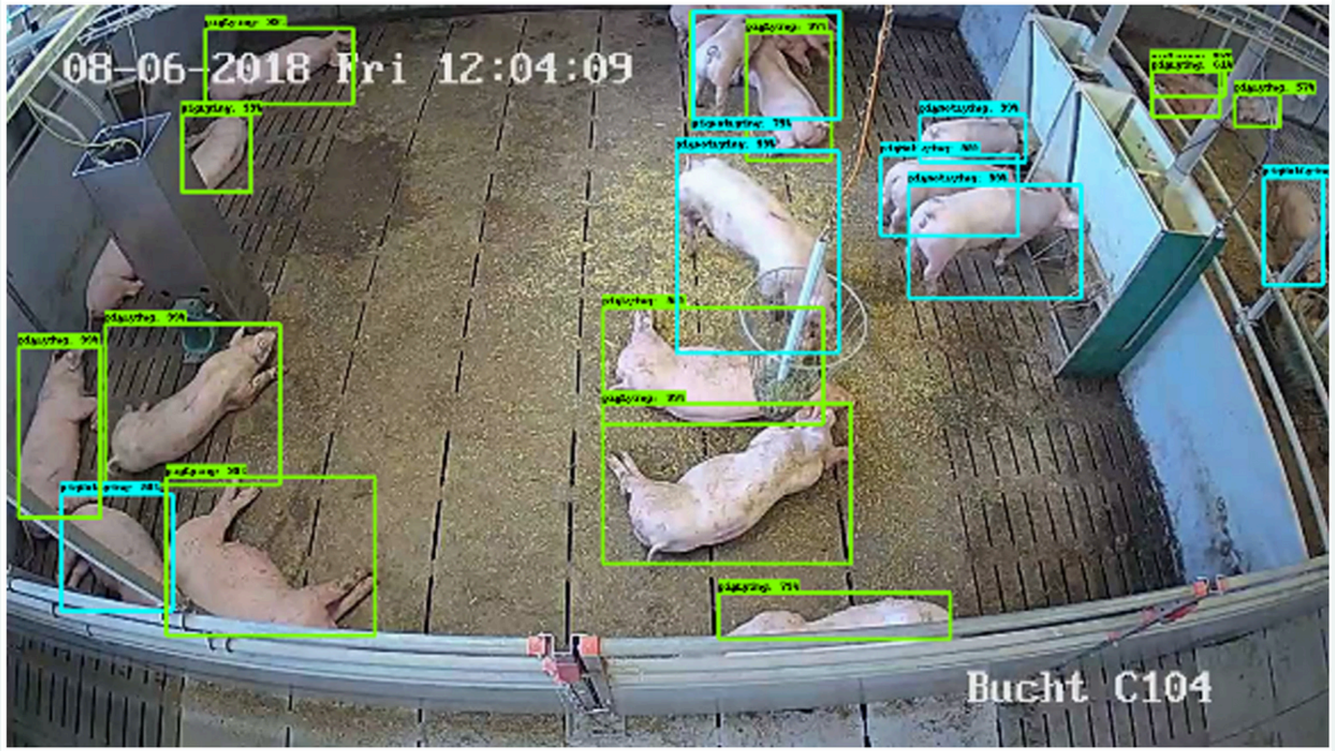




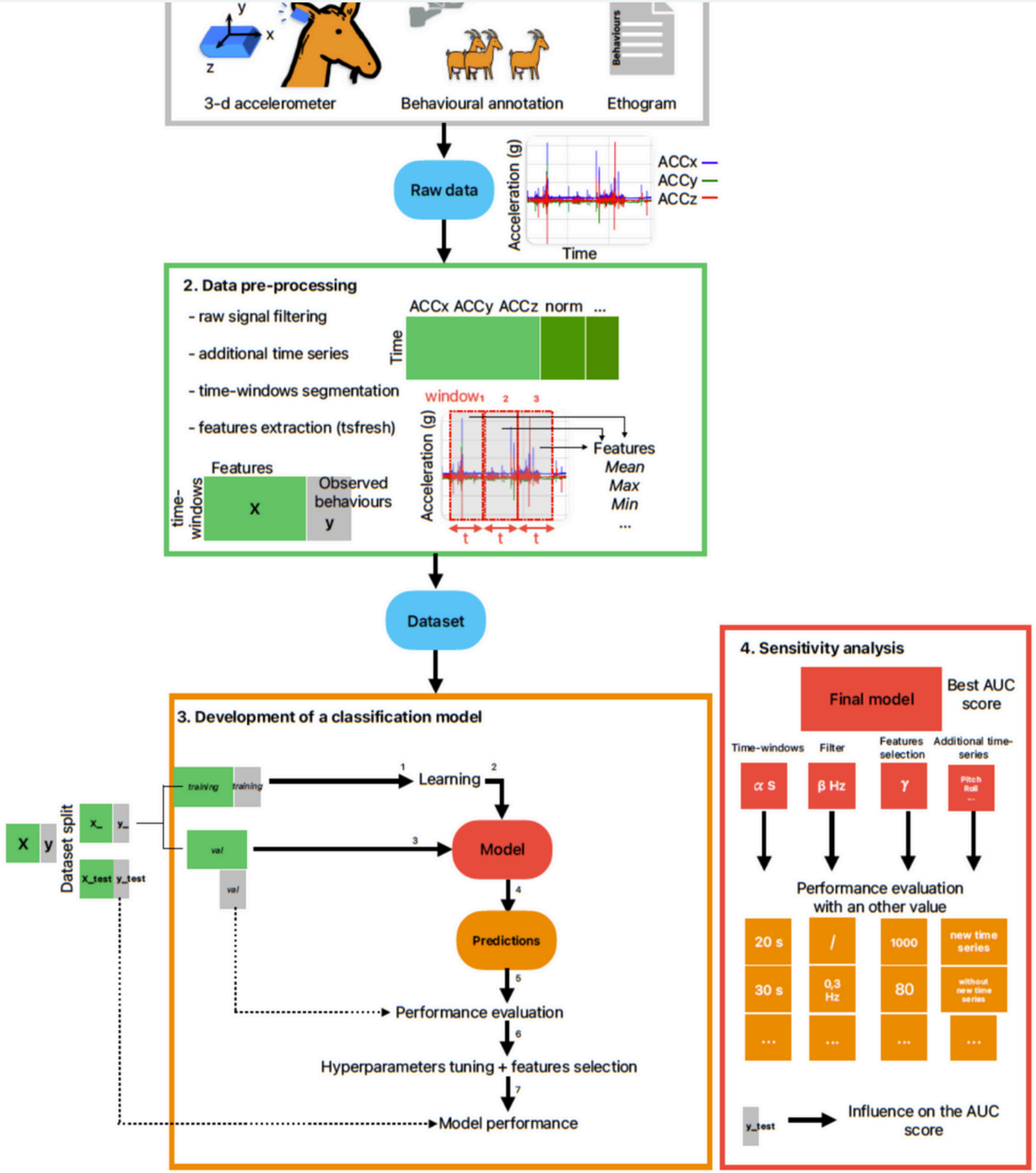
VGG+CNN+LSTM


(d)
25088-dimensional vector
1st frame
2nd frame
60th frame
VGG-16
VGG-16
VGG-16
3.3
1.5
4.8
x_1
x_2
x_{25088}
z
z_i
z_o
z_f
LSTM
LSTM
LSTM
60-dimensional vector
y^1
y^2
y^{60}
c^1 h^1
c^2 h^2
c^{59} h^{59}
Fully connected layer
2-dimensional vector
Softmax
1
0
or
0
1
aggression
non-aggression

R-CNN + NAS



ACCELEROMETER BASED



RESOURCE PAGE

Yolo Bot Slim

CNN + LSTM

YOLOv8n, MobileNetSSD, and EfficientNet-BO

RCNN NAS for position

VGG16 + Stacked CNN

Accelerometer Data Pipeline

Deep Lab CUT