

SPEECH GESTURE RECOGNITION

PROGRESS PPT 3

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CONTENT

01

COMPLETED

02

NEXT STEPS

03

TO DISCUSS

COMPLETED

01

POSE CLASSIFIER

02

PALM POSE CLASSIFIER

03

POSE DETECTION PIPELINE

POSE MODEL

- 2 BLOCKS
 - PERSON EXTRACTION
 - POSE DETECTION

POSE CLASSIFIER

- NEURAL NETWORK
- TRAINED ON HAND AND SHOULDER KEY-POINT VALUES

PALM POSE MODEL

- YOLO OBJECT DETECTION MODEL
- TRAINED ON MANUALLY LABELLED DATA

PERSON CLASSIFIER

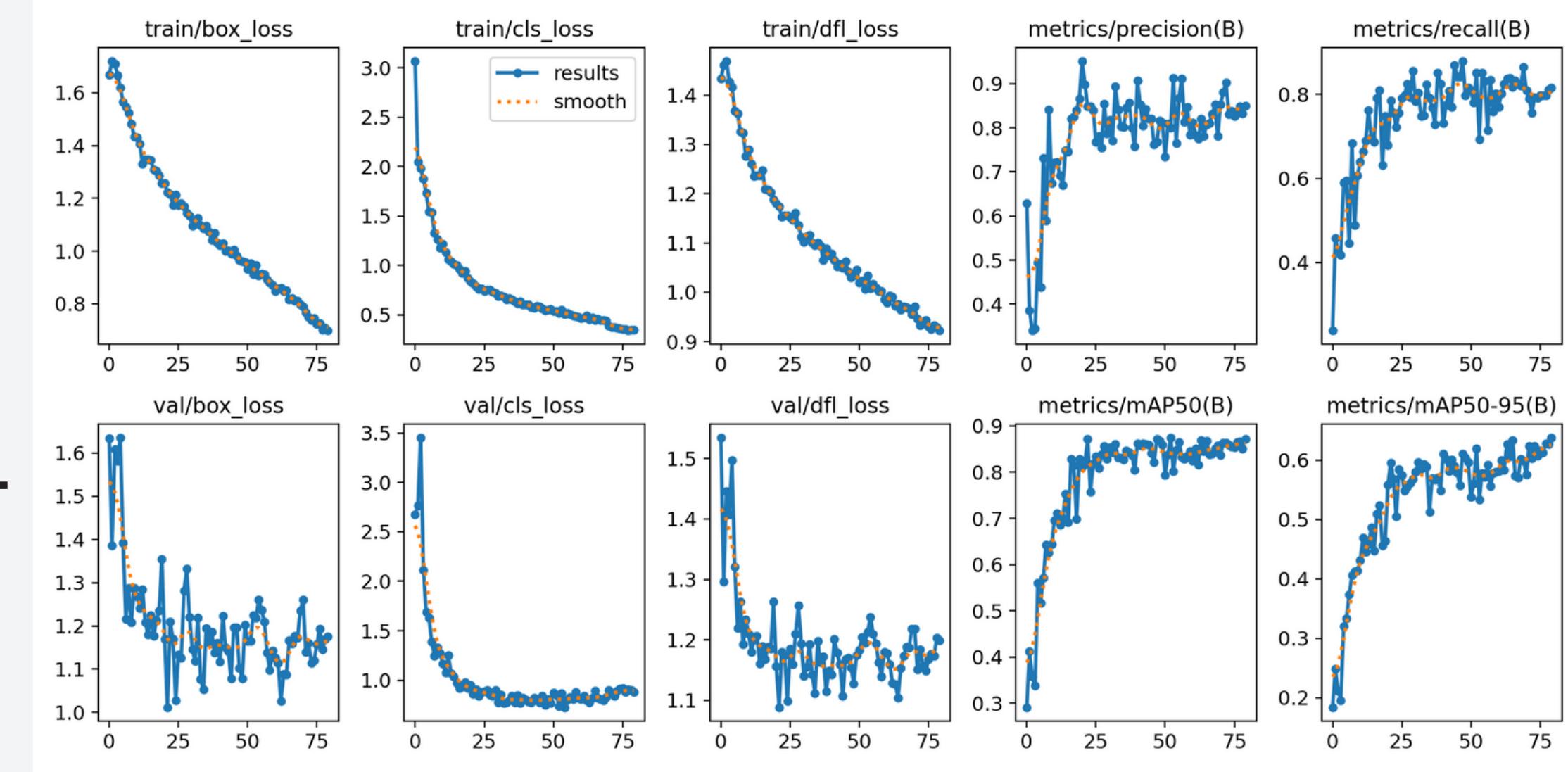
- YOLO CLASSIFICATION MODEL
- TRAINED ON MANUALLY LABELLED DATA

PALM POSE MODEL

- YOLO V8 OBJECT DETECTION MODEL

ABOUT THE DATA

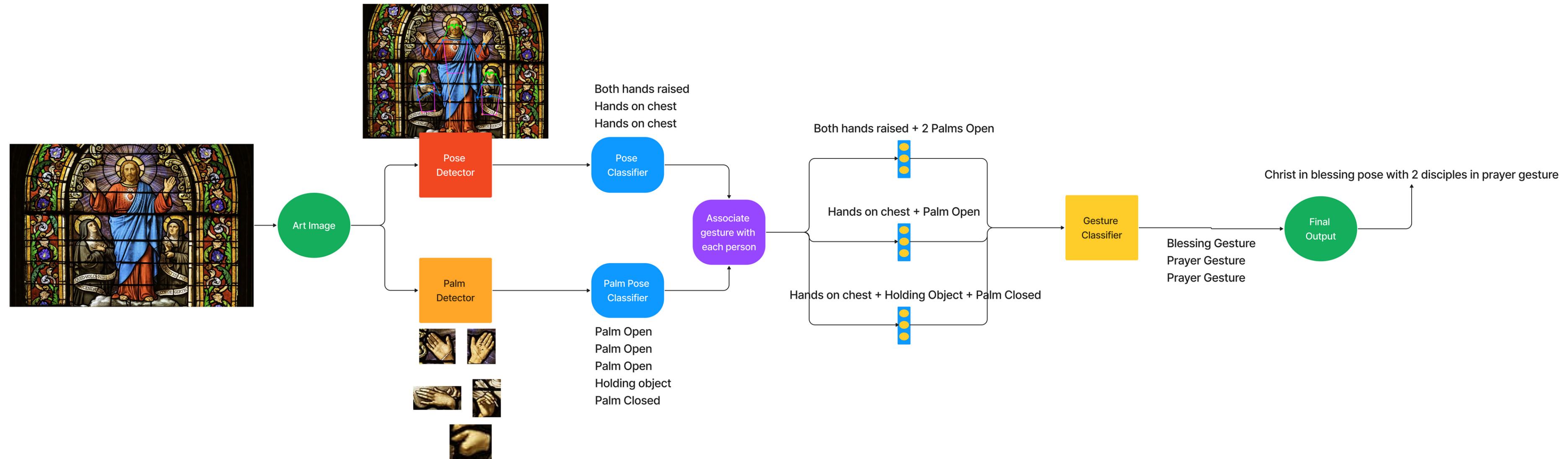
- GENERATED AFTER EXTRACTING EACH PERSON USING THE TRANSFORMER MODEL
- OBTAINED CLOSE TO 4000 IMAGES AND ADDED THE FOLLOWING CLASSES
 - 415 NULL IMAGES
 - 165 BLESSING IMAGES
 - 260 PRAYER GESTURES
 - 125 IMAGES WITH FRUIT
 - 35 IMAGES WITH GRAPES



POSE CLASSIFIER

- SIMPLE NEURAL NETWORK
- TRAINED ON HAND AND SHOULDER KEY-POINT (6) LABELS OBTAINED FROM POSE MODEL
- CURRENT TRAINED BLOCKS:
 - BOTH HANDS RAISED
 - PRAYER POSE
 - NULL
- (HAND ON CHEST)

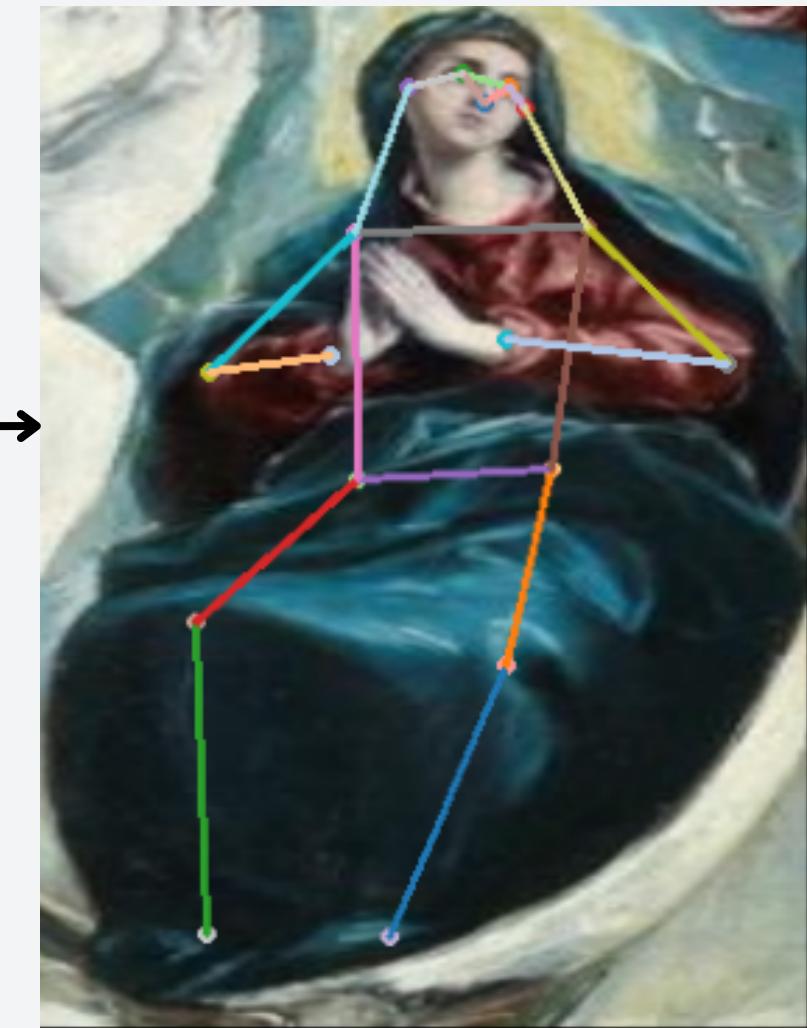
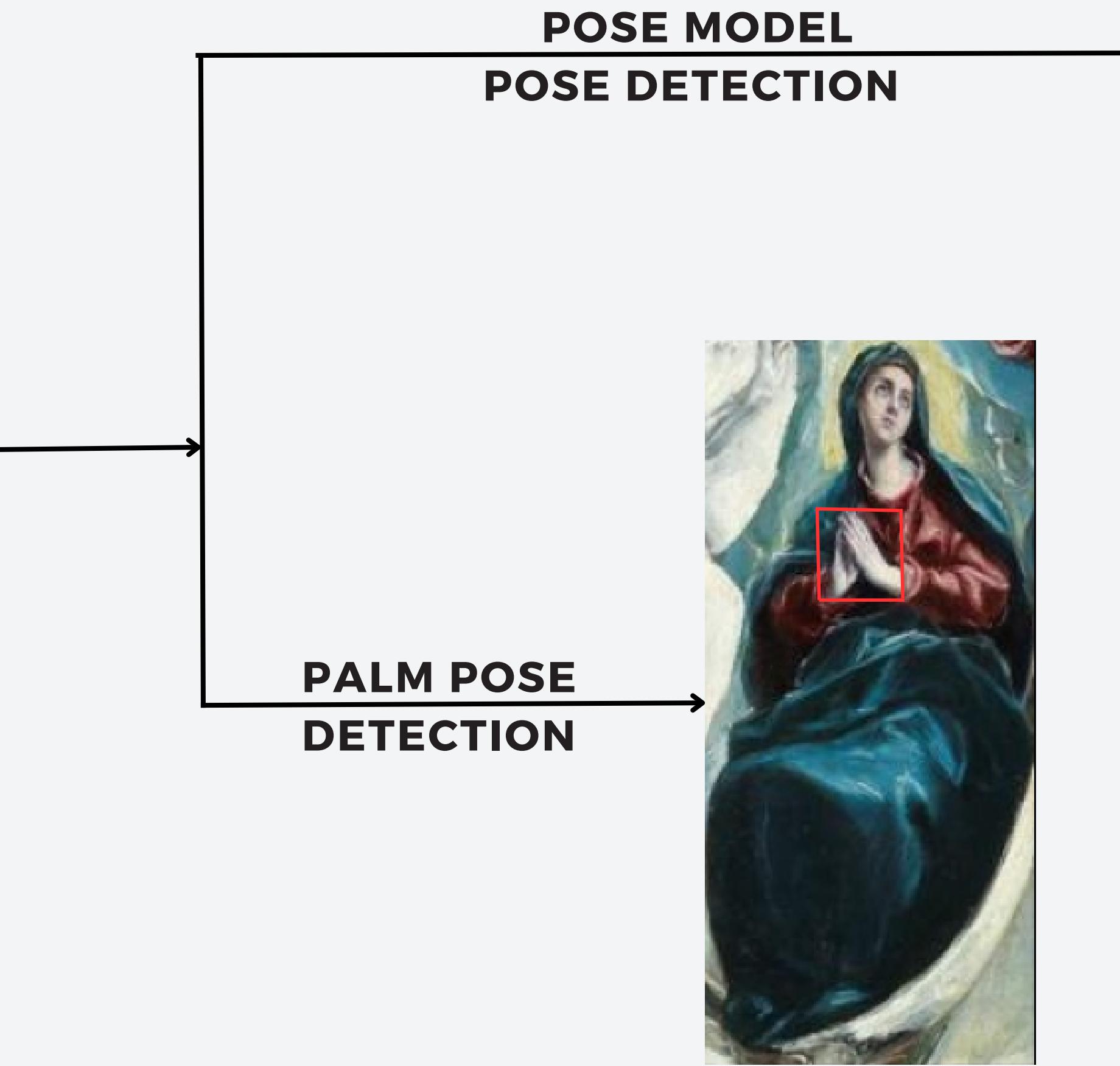




POSE MODEL

- PERSON EXTRACTION





FINAL OUTPUT

- COMBINE THE PREDICTIONS AND GIVE FINAL OUTPUT
- CURRENT PRED CLASSES:
 - FOR HANDS:
 - BOTH ARMS RAISED (ORANS GESTURE: PRAISE AND SUBMISSION TO GOD)
 - PRAYER POSE (POSTURE OF PRAYER AND DEVOTION TO GOD)
 - FOR PALM:
 - PRAYER POSE
 - TWO FINGERS RAISED (BLESSING GESTURE)

TODO:

- ADD ART IMAGES FOR TRAINING POSE CLASSIFIER
- CREATE PIPELINE EXECUTABLE THROUGH TERMINAL
(CURRENTLY IN JUPYTER)
- TEST THE PIPELINE ON LARGE NUMBER OF IMAGES
- IMPROVISE

PROBLEMS

- LESS EXAMPLES FOR CERTAIN CLASSES (FRUITS AND GRAPE)
- BLESSING GESTURE NEED MORE POSITIVE EXAMPLES WHERE BABY JESUS IS NOT INVOLVED
- MULTIPLE TIMES SAME PERSON EXTRACTED BY PERSON EXTRACTION MODEL

ArtDL

classify person

gpt model captioning

- **CAN:**
 - **IMPROVE THE PALM POSE DETECTION MODEL FURTHER WITH A LARGER MODEL OR OTHER WAYS TO IMPROVE METRICS**
 - **ADD ART IMAGES FOR TRAINING POSE CLASSIFIER**
 - **TEST THE PIPELINE ON LARGE NUMBER OF IMAGES**