

# MAPPING COORDINATES TO YOLO LABELS

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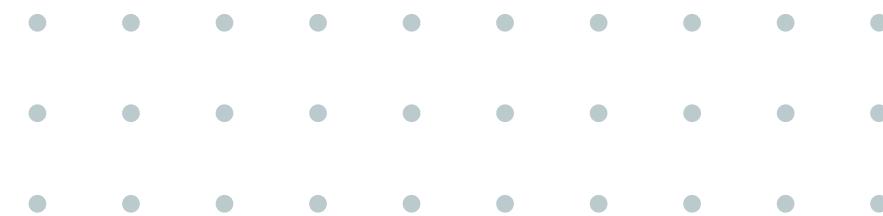
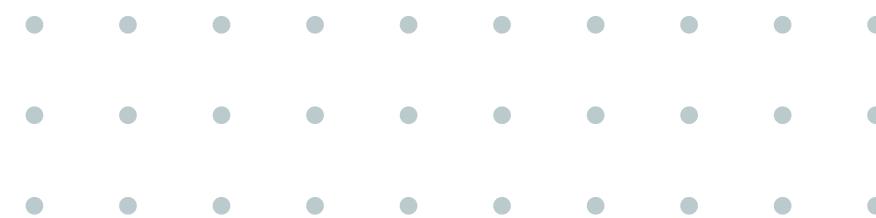


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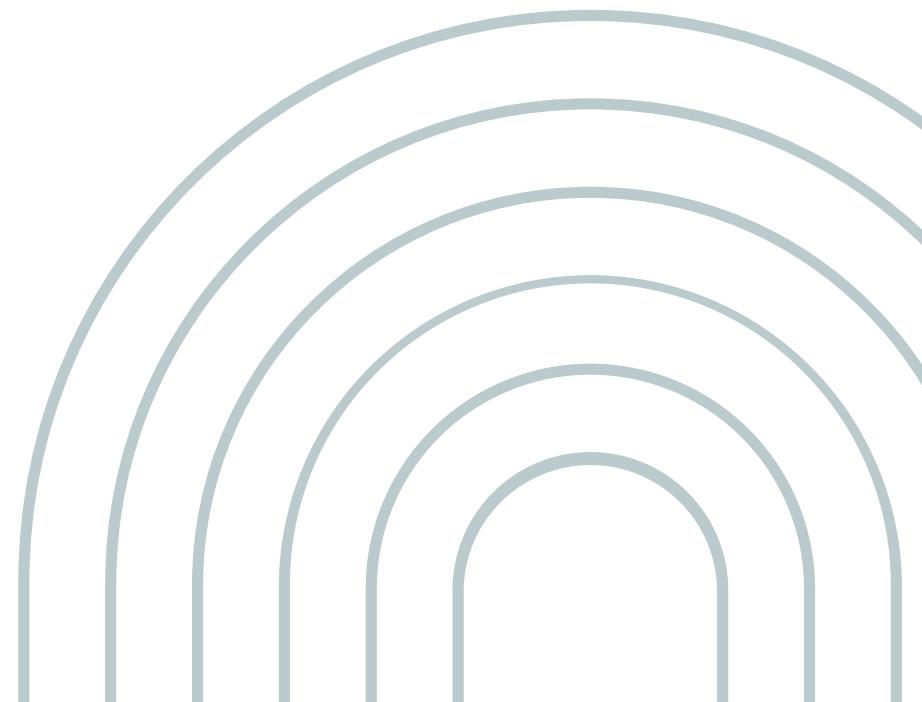
# INTRODUCTION

- In this presentation we will discuss the process of mapping coordinates from JSON data to labels in YOLO.
- Our focus will be on comparing the bounding boxes generated by YOLO labels with the original bounding boxes in damage images.
- Mapping JSON data ensures the model can identify different types of objects, making it useful in various applications.



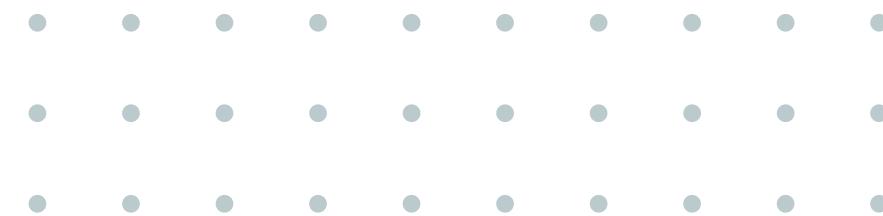
# UNDERSTANDING YOLO BOUNDING BOXES

- YOLO utilizes bounding boxes to localize and classify objects within images.
- Bounding boxes serve as rectangular regions enclosing the objects of interest.
- They are represented by coordinates:
  - 1.(x, y) for the top-left corner of the bounding box.
  - 2.(width, height) for the dimensions of the bounding box.



# MAPPING JSON COORDINATES TO YOLO

- JSON data serves as a repository for coordinates corresponding to damages detected in images.
- These coordinates encompass the location information necessary for identifying and bounding the damages.
- In the mapping process, these JSON coordinates are translated into YOLO labels, which entail bounding boxes encapsulating the detected damages.
- These YOLO labels, once generated, are utilized to train the YOLO model, enabling it to recognize and localize damages accurately.



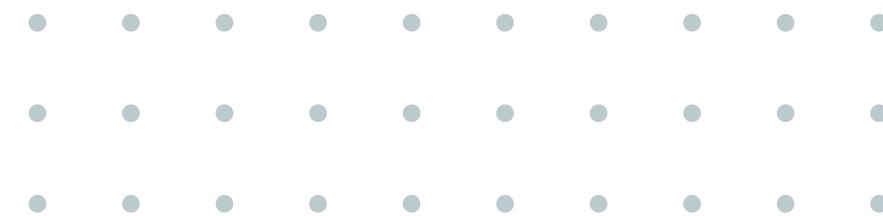
# YOLO AND ITS LABELS

- YOLO (You Only Look Once) is a state-of-the-art object detection system.
- It's designed to detect objects in images or video frames with remarkable speed and accuracy.
- YOLO plays a crucial role in various applications such as surveillance, autonomous vehicles, and image/video analysis.
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- It enables real-time detection and classification of objects within a scene.
- During training, YOLO learns to associate features in images or frames with corresponding class labels.
- This process enables the model to identify and classify objects in unseen data accurately.



# Mapping JSON Data to YOLO Labels

- To train YOLO effectively, we need to map the JSON data containing damage information to YOLO class labels.
- This process ensures that YOLO can accurately recognize and classify different types of damages.



# Mapping JSON Data to YOLO Labels

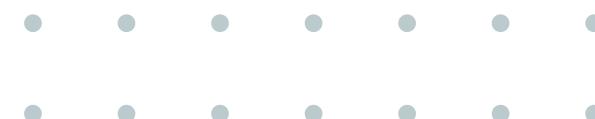
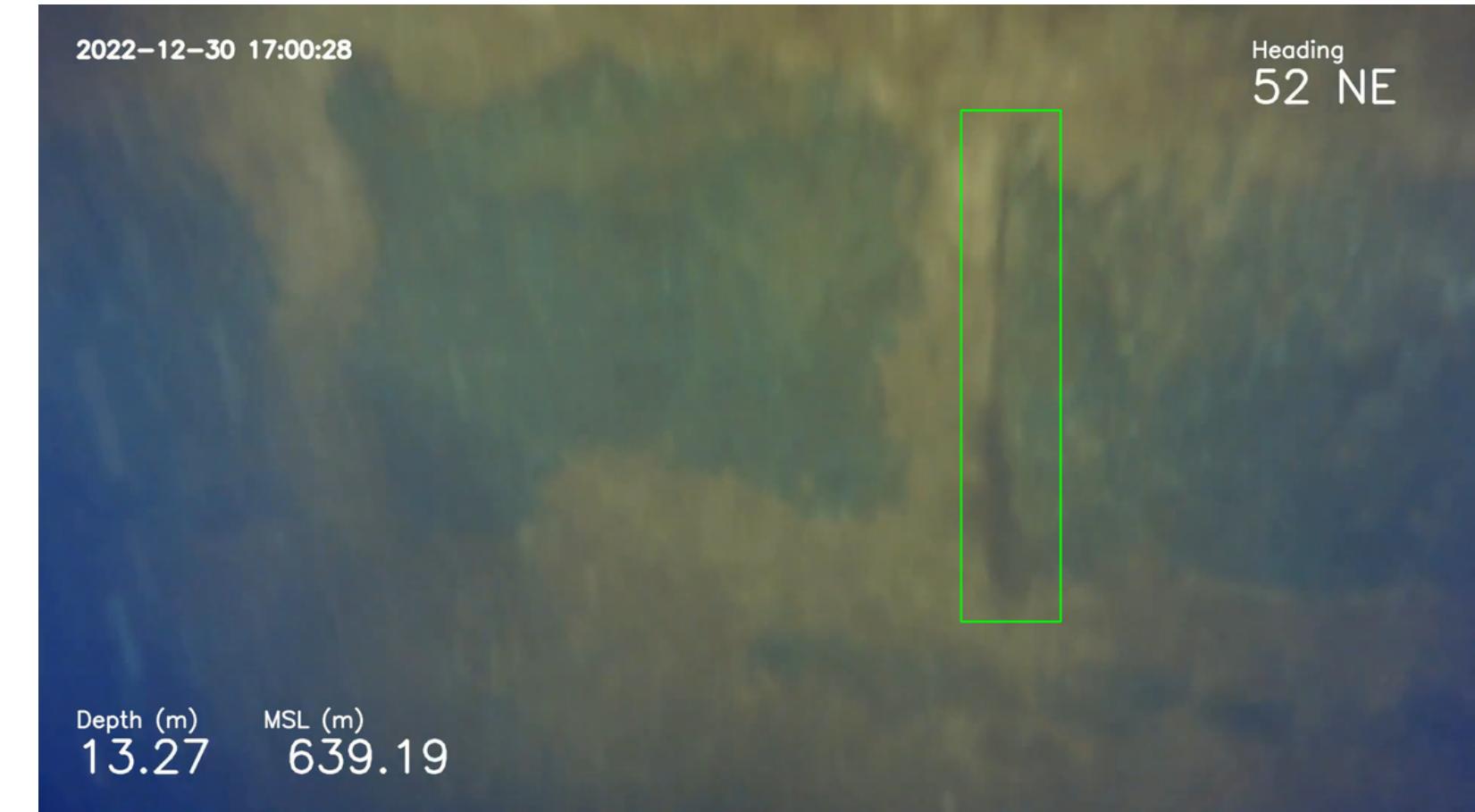
Mapping unique "damage\_type" to Yolo Lables:

- "Unintended Eccentricities" -> Class label: 0
- "Loss of Material" -> Class label: 1
- "Displacement of stones" -> Class label: 2
- "Reinforcement Exposed" -> Class label: 3
- "Cracks" -> Class label: 4
- "Sourcing and Deteriorated Stones" -> 5
- "Loss of Material with reinforcement exposed" -> 6
- "Cavities" -> 7
- "Concrete degradation and exposed reinforcement" -> 8
- "Mild cavities" -> 9
- "Concrete degradation" -> 10
- "Honey Combing" -> 11
- "Deteriorated Stones/bricks" -> 12
- "Deteriorated joint" -> 13
- "Loss of pointing Mortar" -> 14
- "Presence of debris/Rocks/Tree-Trunks" -> 15
- "Minor cavity" -> 16
- "Loss of pointing mortar and deposits of debris" -> 17
- "Distressed Joints" -> 18
- "Unintended Eccentricities P1 Highlight" -> 19
- "Material Deterioration/ Delamination" -> 20
- "Material disintegration" -> 21
- "Spalling of gunniting" -> 23
- "Deposits of debris/Rocks/Tree-Trunks" -> 24
- "Abrasion" -> 25
- "Pipe/debris noted" -> 28
- "Material Loss/Disintegration" -> 29
- "Reinforcement Spotted" -> 30

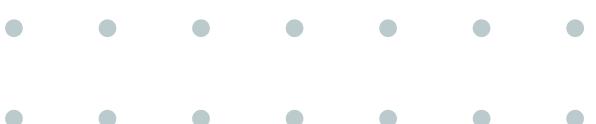
If the JSON data indicates "Loss of Material" damage, it will be assigned class label 1 in YOLO. Similarly, each unique damage type in the JSON data is mapped to its corresponding YOLO class label. Once the JSON data is mapped to YOLO labels, it can be used in training the YOLO model.



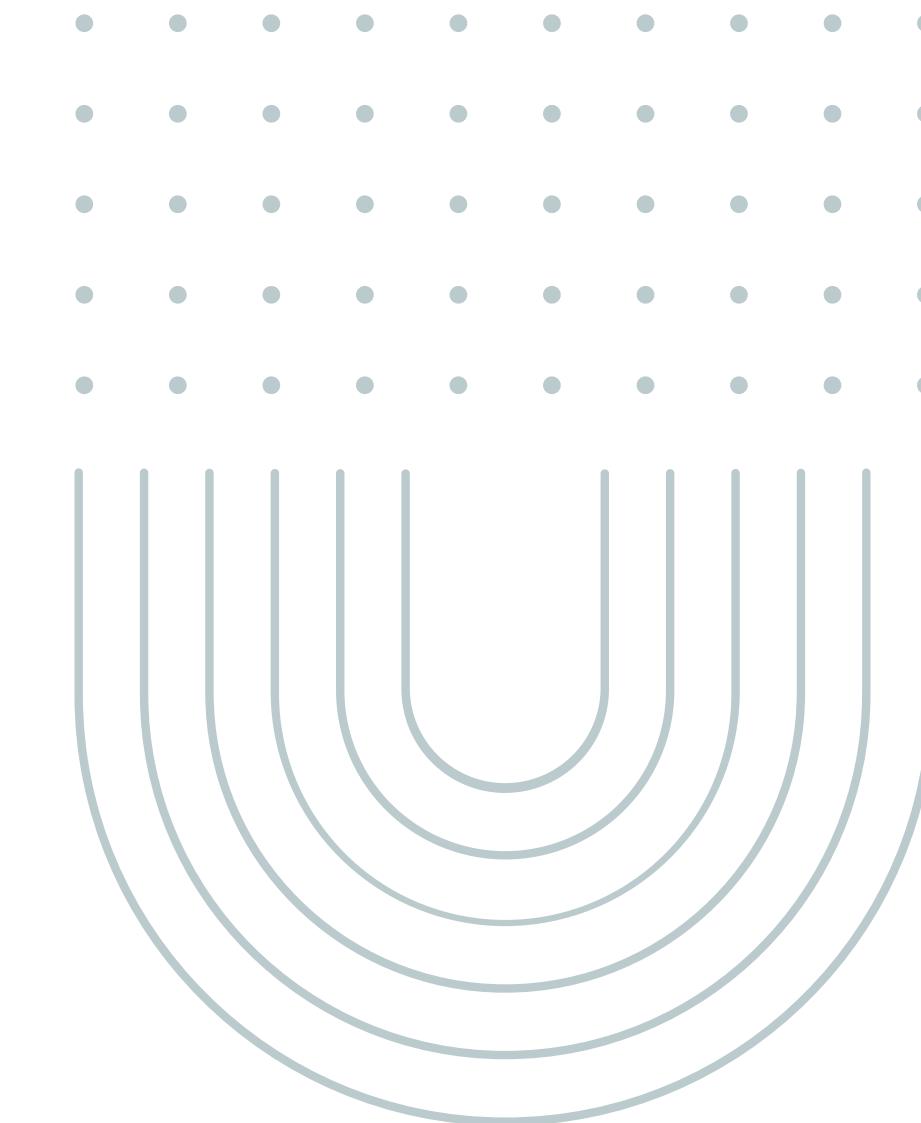
# EXAMPLES OF DAMAGE\_JSON TOOL VS YOLO LABELING



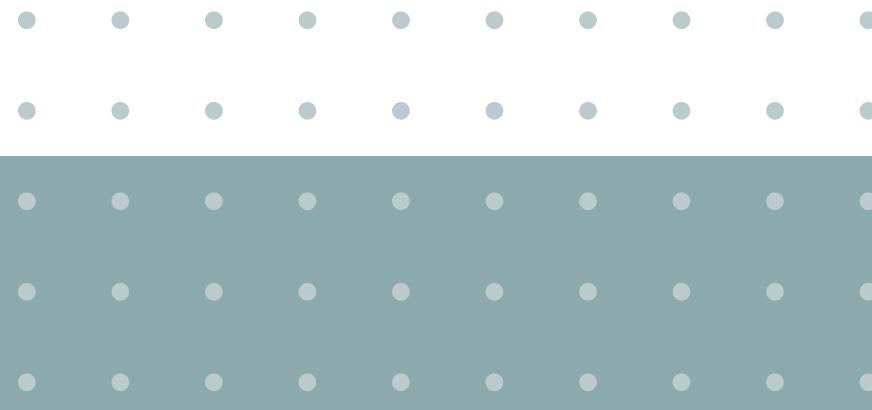
# EXAMPLES OF DAMAGE\_JSON TOOL VS YOLO LABELING



- Mapping JSON data to YOLO labels is essential for training robust object detection models.
- Accurate labeling ensures that the model can effectively recognize and classify objects of interest.
- Accurate labeling is crucial for the success of object detection models.
- It lays the foundation for the model's ability to generalize well to unseen data and perform reliably in real-world scenarios.
- By continually refining labeling processes and expanding datasets, we can improve model performance and advance the field of object detection.



## CONCLUSION



# THANK YOU

