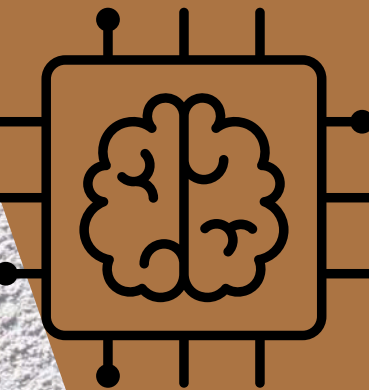


PREPARED BY TEAM **PINAKA**

# AUTOPACK



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**Ankith**  
**Ayush**  
**Panshul**



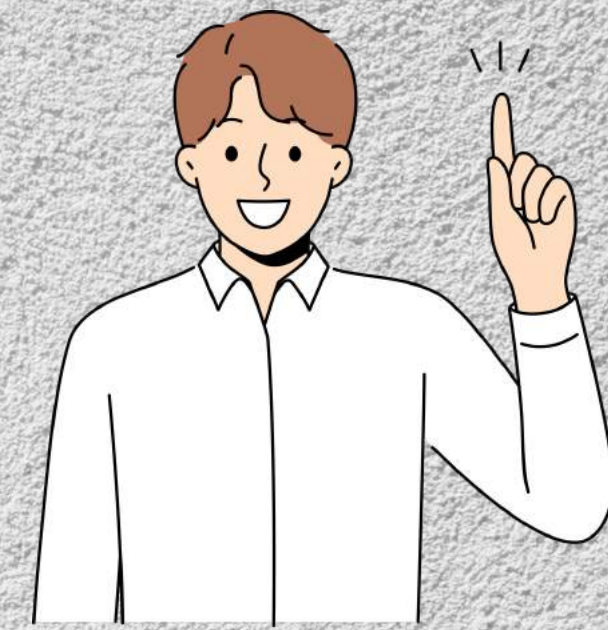
# PROBLEM STATEMENT



- In the E-commerce and logistics industry, companies serving as intermediaries between producers and consumers often face challenges in their warehouse operations, particularly in **package selection**. The process of matching commodities to appropriately sized packages is currently performed **manually**, which can lead to inefficiencies in material usage and shipping capacity. We propose implementing a computer vision solution to **automate** and **optimize** this package selection process, aiming to reduce packaging waste and maximize shipment capacity.



# SOLUTION UNDERTAKEN



- Implement Computer Vision for **Dimensional Analysis**: We developed and deployed computer vision models to accurately identify and measure the dimensions of commodities using **object detection**, **segmentation**, and **3D reconstruction** from **2D images**.
- On the basis of the data obtained, an optimal box is found from the list of boxes, keeping in mind the **volume of the object** and the **percentage of free space** needed.
- The user is also given an option if they want to pack multiple objects.

SETTING YOU UP FOR SUCCESS





# EXTENDED CASE

- Now, if the user wants to pack **multiple objects**, a new bounding box is selected which will pack all the boxes of the objects in a new box.
- An interesting thing to note here is that total volume of the previous boxes **cannot** be the only metric to select this box. We also need to consider the various possible **combinations** of **orientations** and **positions** and select the best out of them, while also simultaneously checking that none of the boxes **overlap**.
- Taking all of this into account, our model successfully chooses an optimum box to pack objects as well as pack a number of objects into the same box.