

# WAREHOUSE MANAGEMENT

A yellow DHL forklift is positioned in the center of a warehouse aisle. The aisle is flanked by high industrial shelving units filled with cardboard boxes. The forklift has the DHL logo on its side. The floor is polished and reflects the overhead lights. The overall scene depicts a modern, organized warehouse environment.

TECHNOVANZA: TECH-A-THON

## BYTE-BUILDERS

Jaishree Epili  
Shardul Bhawe  
Dev Gandre

# UNDERSTANDING THE PROBLEM STATEMENT

## Where does the problem lie?

### DISORGANIZED BOX PLACEMENT

Forklifts struggle with sudden obstacles, moving equipment, and layout changes, causing inefficiencies and safety risks.

### DYNAMIC ENVIRONMENT CHALLENGES

Improper storage ignoring expiry, demand, or category disrupts workflows, delays retrieval, and risks spoilage.

### INEFFICIENT AND UNSAFE PATH PLANNING

Poorly optimized paths increase delays, energy use, and collision risks, affecting overall safety and efficiency.

### POOR WAREHOUSE LAYOUT

Inefficient layouts restrict forklift mobility, increase travel times, and reduce operational productivity.

### MISMANAGEMENT OF PRIORITIES

Neglecting high-demand or urgent goods causes order delays, operational disruptions, and customer dissatisfaction.

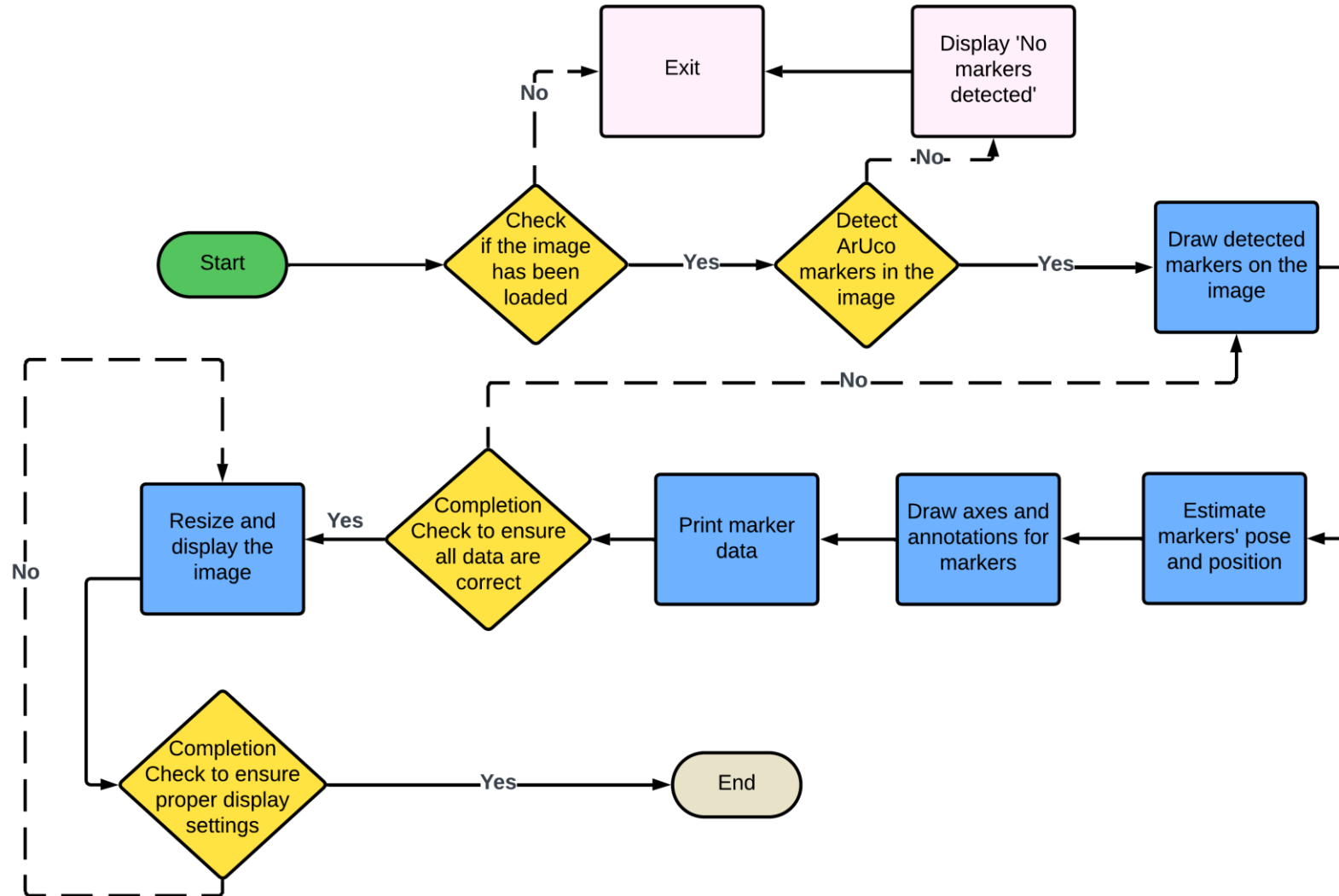
# OUR PROPOSED UNIQUE SOLUTION

## What marks the difference in our solution?



# TARGETTING TASK 1

How did we solve the task at hand?



Flowchart to detect Arucodes, thereby determining position, orientation and number of boxes

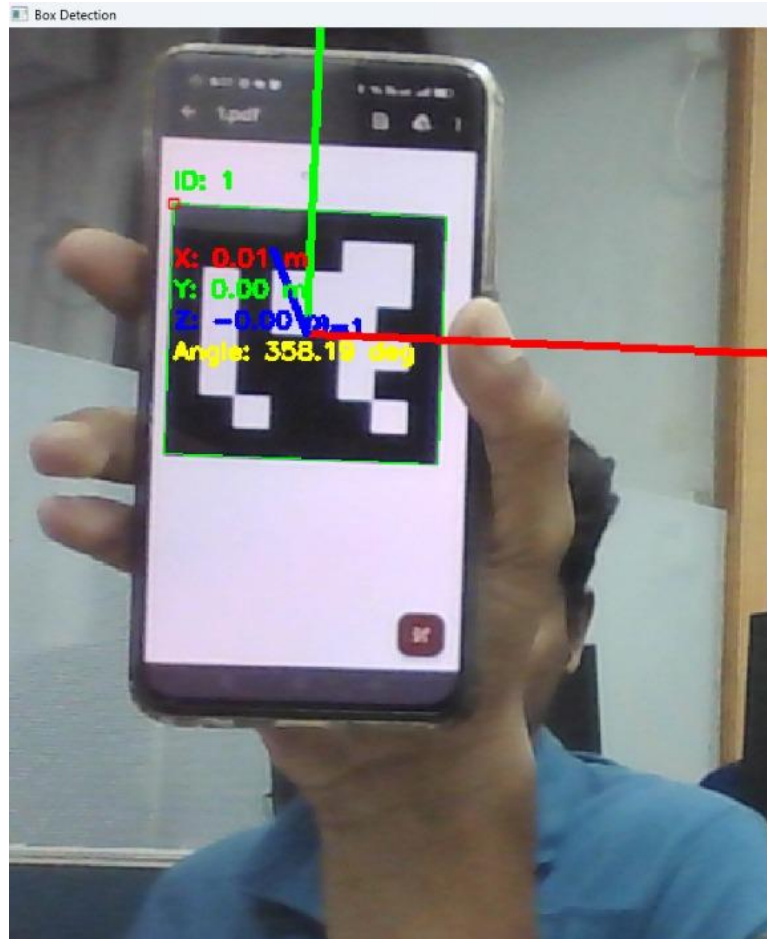


## OUTPUTS OF TASK 1

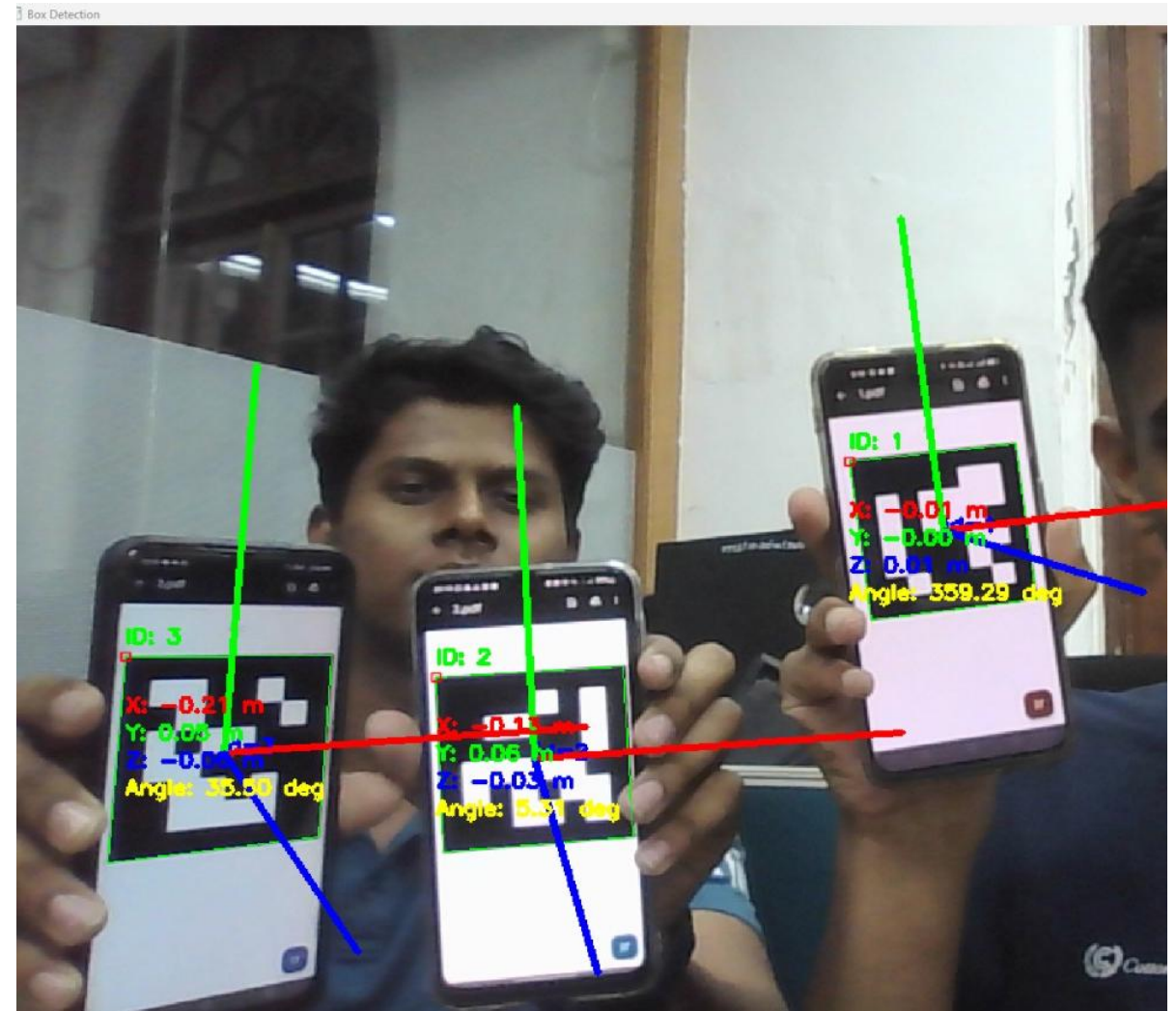


# CORRELATING TASK 1 SOLUTION IN REAL WORLD

How do we solve the problem practically?



*Calibration(i.e. setting reference) through Arucode*



*Now, all Arucodes further would have their positions and orientations calculated in accordance to reference*



# CORRELATING TASK 1 SOLUTION IN REAL WORLD

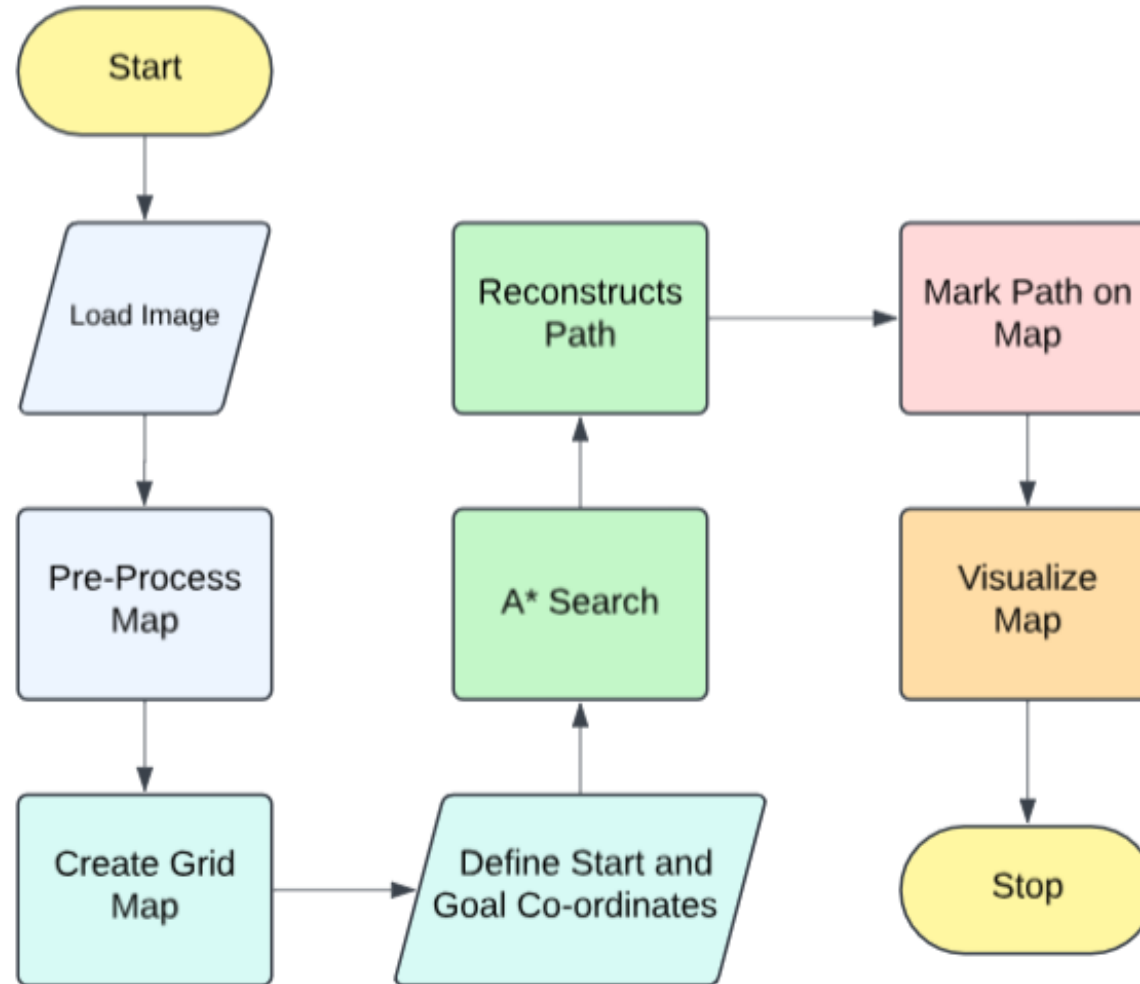
How do we solve the problem practically?



*Arucodes being detected from the top of the boxes.*

# TARGETTING TASK 2

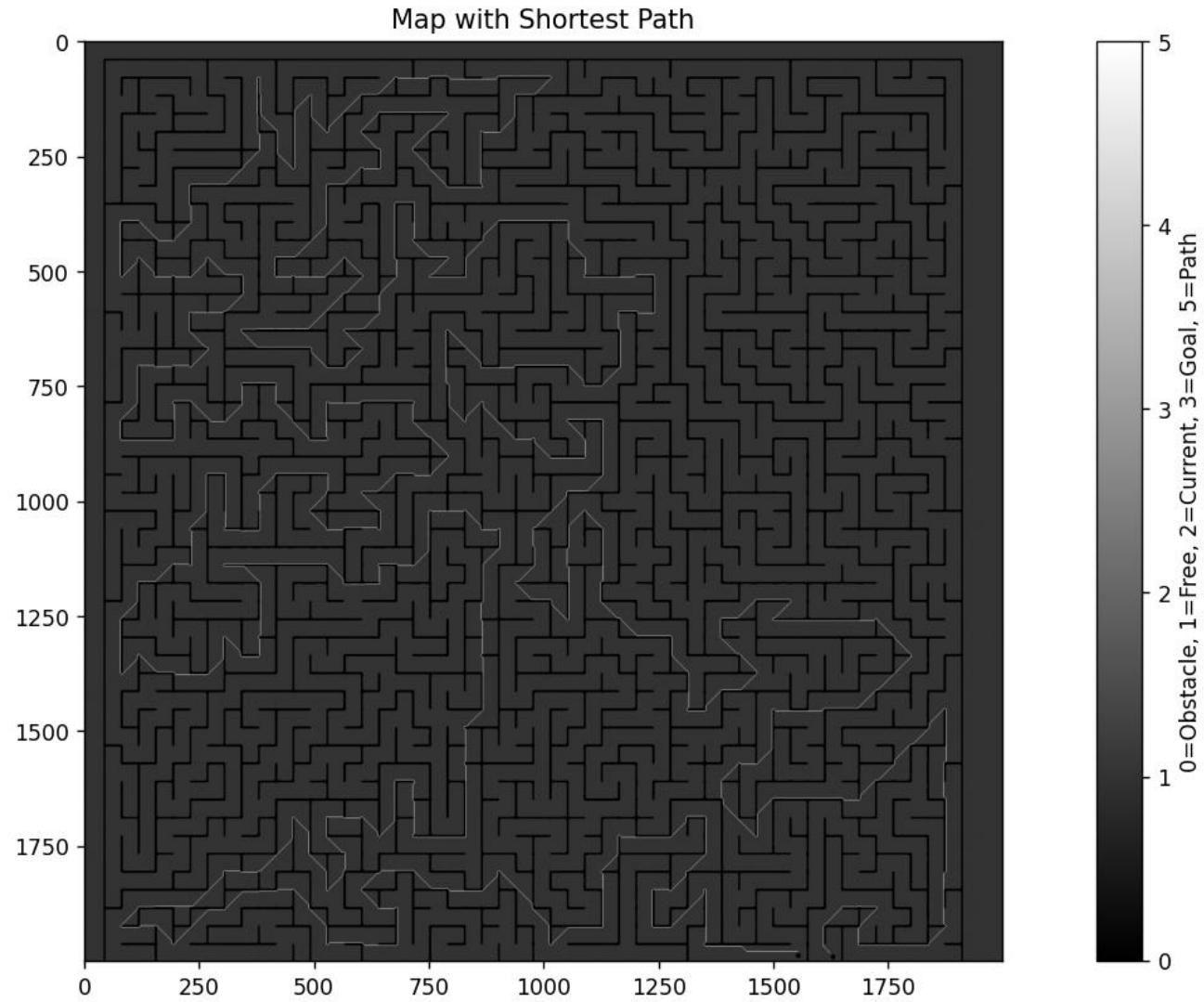
How did we solve the task at hand?



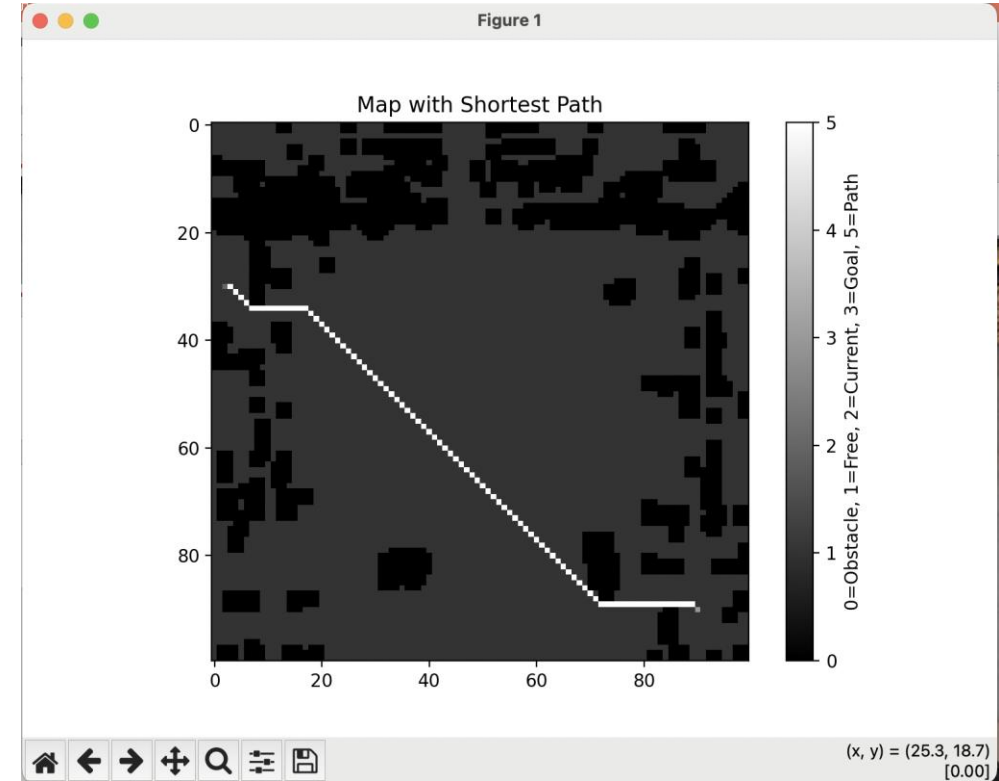
*Flowchart for tracing a path from current position to goal position.*



# OUTPUTS OF TASK 2



## How do we solve the problem practically?





A yellow DHL forklift is positioned in the center of a warehouse aisle. The aisle is lined with high industrial shelving units filled with cardboard boxes. The forklift has the DHL logo on its side. The floor is polished and reflects some light. The overall scene is a typical warehouse environment.

# THANK YOU!

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Jaishree Epili  
Shardul Bhawe  
Dev Gandre