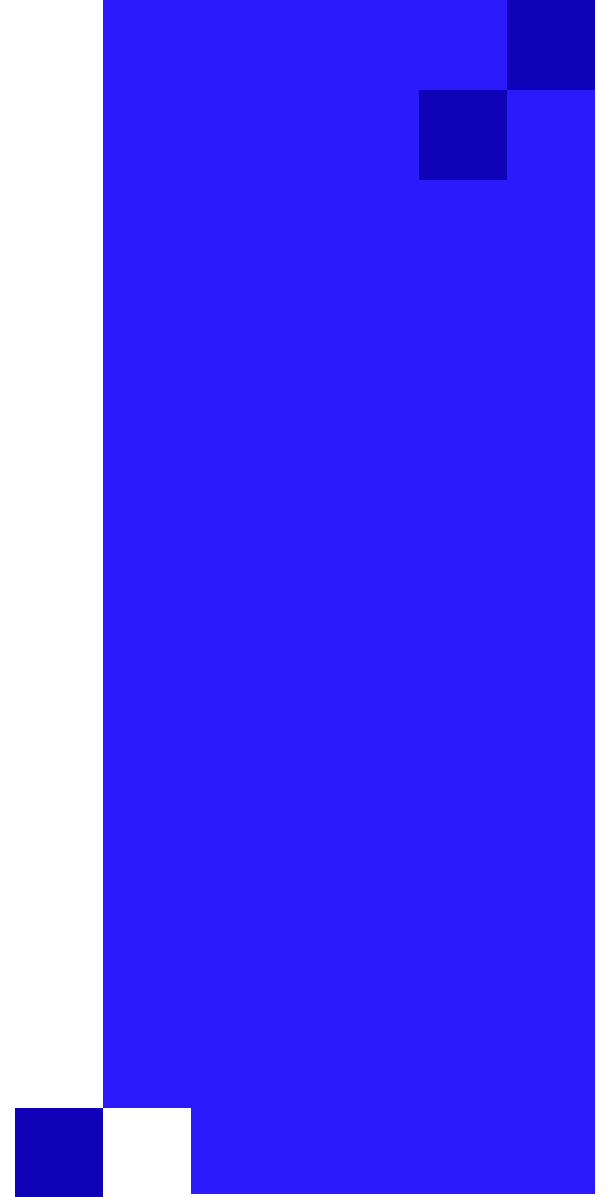


# PITCH PRESENTATION

LS1 Warehouse Packing





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02 **Our Solution Overview**

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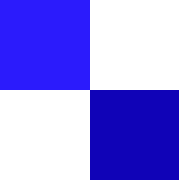
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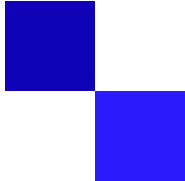


# Introduction & Problem Statement

Present by: Xuran Chen



"Warehouse operations today face significant challenges when packing and  
**PackPilot**  
organizing boxes in large containers."



# Introduction

- **What is PackPilot?**
  - An innovative tool designed to calculate optimal box arrangements.
- **How does it solve the problem?**
  - Maximizes space utilization through algorithm-based optimization.
  - Dramatically reduces the time needed for decision-making.
  - Ensures consistent, high-quality packing arrangements.



# Our Solution Overview

Present by: Ruxin Ma

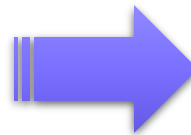
# AI-Driven Warehouse Packing – ‘PackPilot’

**Core Value:** Translating AI Algorithms into Practical Warehouse Operations: From Optimization Theory to Real-world Efficiency Gains

Name	Size	Direction	Note
Item0001	10*200*300	face up	fragile
Item0001	10*200*300	face up	fragile
Item0001	10*200*300	face up	fragile
Item0001	10*200*300	face up	fragile testing testing testin...
Item0001	100*2000*3000	face up	fragile
Item0001	100*2000*3000	face up	fragile
Item0001	100*2000*3000	face up	fragile
Item0001	100*2000*3000	face up	fragile
Item0001	100*2000*3000	face up	fragile
Item0001	100*2000*3000	face up	fragile

Manager Console

Leverage AI  
Placement  
Algorithm



Assign  
Task to  
Workers

Next Item

Previous Item

67 / 100

Worker01

Log out

Item Parameters

Size (cm): 30\*30\*30  
Face up  
Fragile

3D View

Worker Console

# Key Features & Technical Approach

## Role-based Access System

Tailored interfaces for managers (assign task) and workers (task execution).

01

02

## AI Optimization Engine

Smart algorithms optimizing packing based on item properties and constraints

03

04

## Flexible Management Interface

Easy item customization and dynamic task assignment capabilities.

## Real-time Visual Guidance

Interactive 2D/3D step-by-step packing instructions for workers

## Technical Approach:

- **Web-based** responsive design accessible from any device
- AI placement **algorithm** with 3D/2D visualization using **Blender technology**



# User Journey

Manager Perspective: Shiyu Zhao

User Perspective: Jiahui Huang





# Manager Perspective Overview

## ■ **Manager Responsibilities**

In the PackPilot system, the manager is primarily responsible for coordinating warehouse packing tasks. Their workflow includes logging into the system, adding items, assigning tasks, and reviewing task history.

## ■ **Design Objectives**

This interface is designed with a focus on efficiency and clarity, helping managers complete the task assignment process quickly and intuitively.




# Manager Perspective: Login and Access Flow

**Welcome Back!**

☒ Manager ☐ Worker

Username

Password  

Don't have an account? [Sign up](#)

[Log in](#)

Log  
in

Sign  
up

01

02


03

04

**Welcome Back!**

☒ Manager ☐ Worker

Username

Password  

Don't have an account? [Sign up](#)


[Log in](#)

[+ Add Item](#)

[Assign Task](#)

[Task History](#)

Name	Size	Direction	Note
Item0001	10*200*300	face up	fragile
Item0001	10*200*300	face up	fragile
Item0001	10*200*300	face up	fragile
Item0001	10*200*300	face up	fragile testing testing testin...
Item0001	100*2000*3000	face up	fragile
Item0001	100*2000*3000	face up	fragile
Item0001	100*2000*3000	face up	fragile
Item0001	100*2000*3000	face up	fragile
Item0001	100*2000*3000	face up	fragile
Item0001	100*2000*3000	face up	fragile

 Jack

[Log out](#)

Active  
state


Log  
out

[+ Add Item](#)

[Assign Task](#)

[Task History](#)

Name	Size	Direction	Note
Item0001	10*200*300	face up	fragile
Item0001	10*200*300	face up	fragile
Item0001	10*200*300	face up	fragile
Item0001	10*200*300	face up	fragile
Item0001	10*200*300	face up	fragile
Item0001	10*200*300	face up	fragile
Item0001	10*200*300	face up	fragile
Item0001	10*200*300	face up	fragile
Item0001	10*200*300	face up	fragile
Item0001	10*200*300	face up	fragile

 Jack

[Log out](#)

**Log Out Confirmation**

Are you sure you want to log out?  
Logging out will [clear all unassigned items](#).  
Please review before proceeding.

[Close](#) [Log Out](#)

# Manager Perspective: Core operation experience

**Add Item and Confirm:** Click on the pop-up box, the name is automatically generated, required to fill in the size, direction, notes, fill out the complete; click **Continue** button will appear in the confirmation pop-up window.

The screenshot shows a web application interface with a sidebar on the left containing icons for 'Add Item', 'Assign Task', and 'Task History'. The main area features a white 'Add Item' pop-up form. The form includes the following fields: 'Item Name' (pre-filled with 'Item0023'), 'Length\* (cm)' (input field), 'Width\* (cm)' (input field), 'Height\* (cm)' (input field), 'Direction\*' (dropdown menu), and 'Note' (text area). At the bottom of the form are 'Close' and 'Continue' buttons. The user's name 'Jack' and a 'Log out' link are visible in the bottom left corner of the interface.

Add Item



The screenshot shows the same web application interface, but with a white 'Item Confirmation' pop-up form. The form displays the item details: 'Item Name: Item0023', 'Size cm<sup>3</sup>: 40.4 \* 52.3 \* 40.0', 'Direction: Face up', and 'Note: Fragile'. At the bottom are two buttons: 'Confirm and Close' (orange) and 'Confirm and Add Next' (blue). The user's name 'Jack' and a 'Log out' link are visible in the bottom left corner of the interface.

Item Confirmation

# Manager Perspective: Core operation experience

**Assign Task:** Select the unassigned items, click **Continue** button; pop-up window to fill in the task information, click **Assign** button, the system will automatically submit the task to the corresponding worker and clear the assigned item.

Name	Size	Direction	Note	
Item0001	10*200*300	face up	fragile	<input checked="" type="radio"/>
Item0001	10*200*300	face up	fragile	<input checked="" type="radio"/>
Item0001	10*200*300	face up	fragile	<input checked="" type="radio"/>
Item0001	10*200*300	face up	fragile testing testing testin...	<input checked="" type="radio"/>
Item0001	100*2000*3000	face up	fragile	<input checked="" type="radio"/>
Item0001	100*2000*3000	face up	fragile	<input type="radio"/>
Item0001	100*2000*3000	face up	fragile	<input type="radio"/>
Item0001	100*2000*3000	face up	fragile	<input type="radio"/>
Item0001	100*2000*3000	face up	fragile	<input type="radio"/>

Select Items



**Assign Task**

Task Name: Task0023

Choose A Worker \*: Worker02

Setup the Container

Length\* (m): 3.2 Width\* (m): 4.7

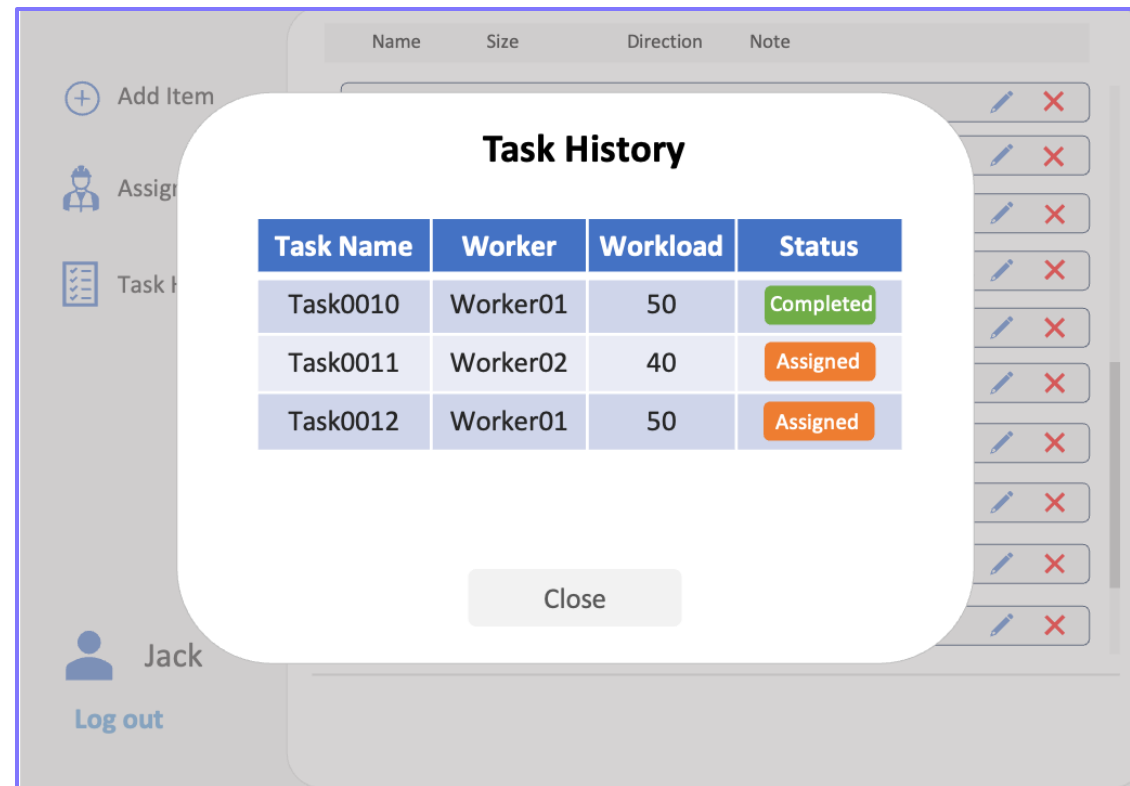
Height\* (m): 4.2

Close Assign

Assign Task

# Manager Perspective: Core operation experience

**Task History:** Click **Task History** button to view all historical task records; it contains information such as the size and direction of the items, which is convenient for subsequent checking or reviewing the task assignment.



Track Task History



# Manager Perspective: Interaction Design Highlights

## Clean workflow

Core actions are completed through intuitive pop-up windows for a streamlined experience.

01

02

## Responsive feedback

Button states change dynamically based on user input, minimizing user errors.

03

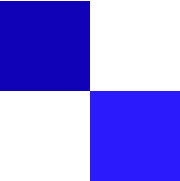
04

## Input control

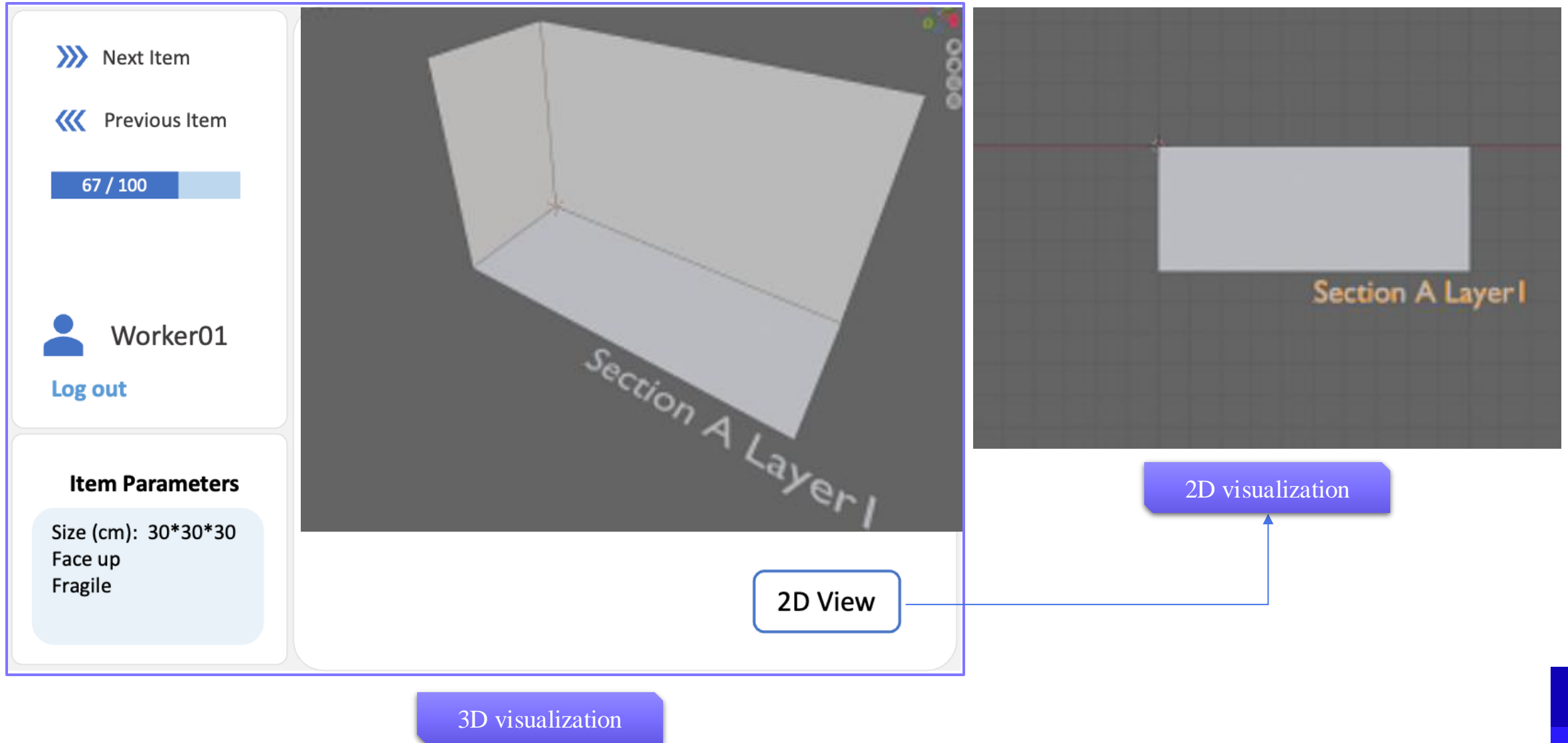
Input fields are validated and auto-truncated to ensure data consistency.

## Step-by-step flexibility

Users can navigate back during multi-step processes, improving usability and fault tolerance.



# Worker Perspective: 2D/3D Real-time Visual Guidance







# Impact & Future Vision

Present by: Feinan Guo



# Business Impact

## ■ AI-Powered Packing Genius

Algorithm calculates the most efficient packing layout.  
Like a Tetris champion calculating perfect box arrangements.

## ■ Managers Just Input & Go

Enter box details - AI handles all complex planning.

## ■ Workers Follow Simple Steps

40% fewer errors, 30% faster than manual packing.

## ■ 20% More Space Utilized

Every container packed to its absolute limits.





# Future Vision

## ■ AI That Learns Like a Veteran

Improves with every box packed, never forgetting a trick.

## ■ Seamless Warehouse Conversations

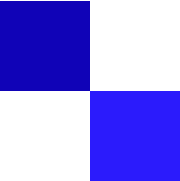
Inventory systems talk directly to packing robots.

## ■ Real-Time Plan Adjustments

Instantly reshuffles when delays occur - no chaos.

## ■ Works Globally, Adapts Locally

Adapts to regional packaging standards, regulations, and material types.



THANK YOU

