

SMART TRANSPORTATION SERVICE WITH AUTONOMOUS DELIVERY ROBOTS ON THE CAMPUS OF THE SCHOOL, HOSPITAL, OFFICE, ETC.

AIOT INNOWORKS 2022
HCMC UNIVERSITY OF TECHNOLOGY AND EDUCATION



Main Content

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OVER VIEW

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DEMONSTRATION

**ACTUAL
SITUATION**

PROBLEM

**AIMS OF
SYSTEM**

**TARGET
SUBJECT**

OVERVIEW

ACTUAL SITUATION

The field of autonomous robotics is growing at a rapid rate.

Transportation problems on the campus of the school, hospital, office,etc

Transportation needs on the campus of the school, hospital, office,etc

Benefits of autonomous delivery robots in life

OVERVIEW

PROBLEM

Techniques of movement

Compatible with the
management system

Safe and confidential

Techniques of delivery

Interact with the user

Evaluate and develop

Costly

OVERVIEW

AIMS OF SYSTEM

Increase
the delivery speed

Function with precision

Reduced Costs

Expand the ability
to operate

Reduce the workload

OVERVIEW

TARGET SUBJECT

On the campus of the
school, hospital, office,etc

Teachers, students
Employee
The doctor, the patient

The restaurant owner
The shop owner

OVER VIEW

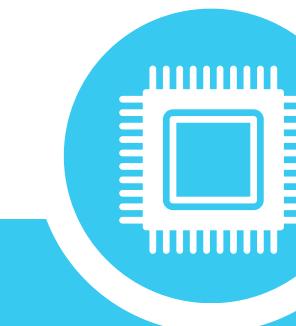
DETAILED DESIGN



GENERAL
MODEL



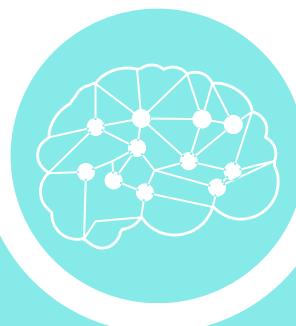
SYSTEM
MODEL



HARDWARE
MODEL

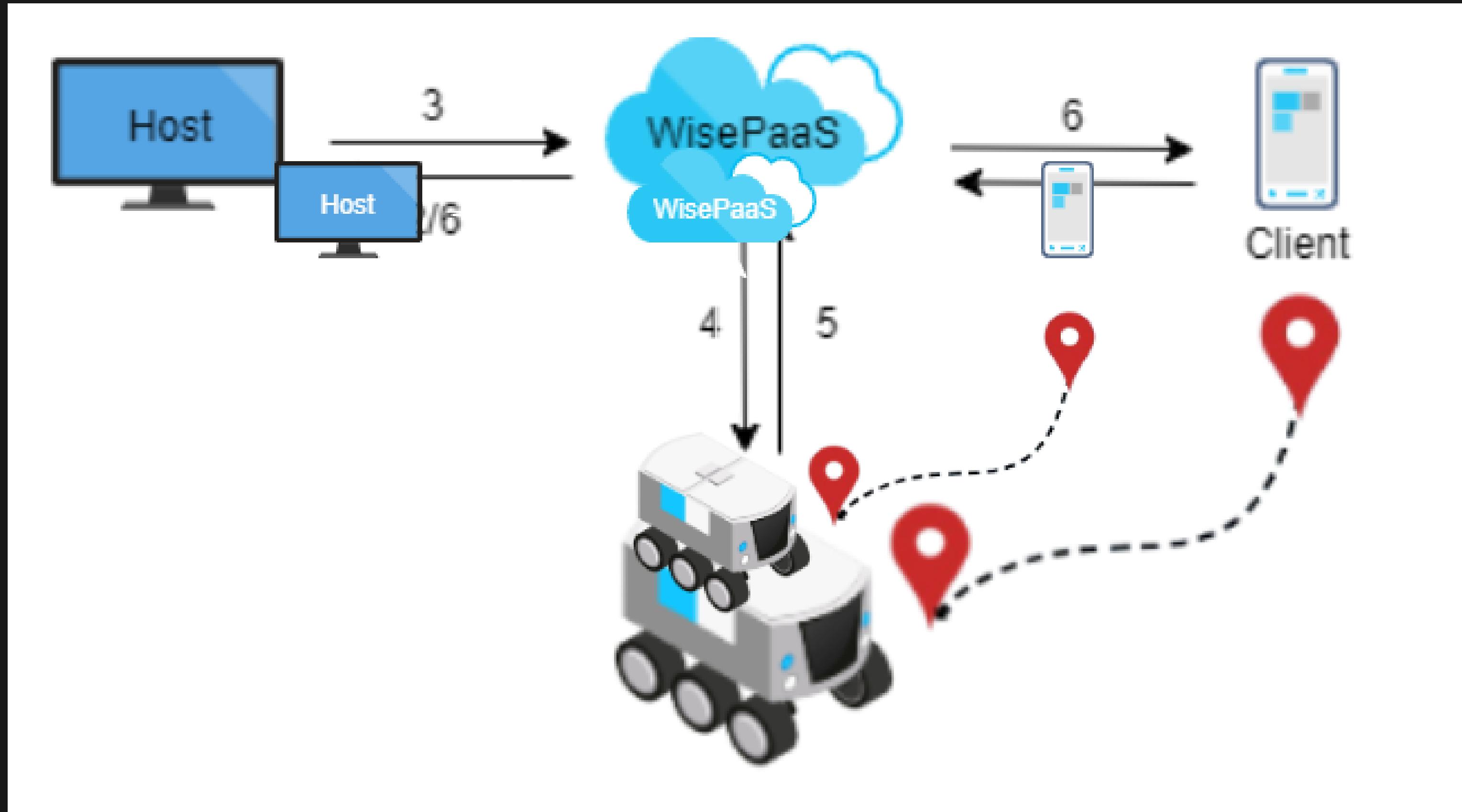


DATA
PACKAGES

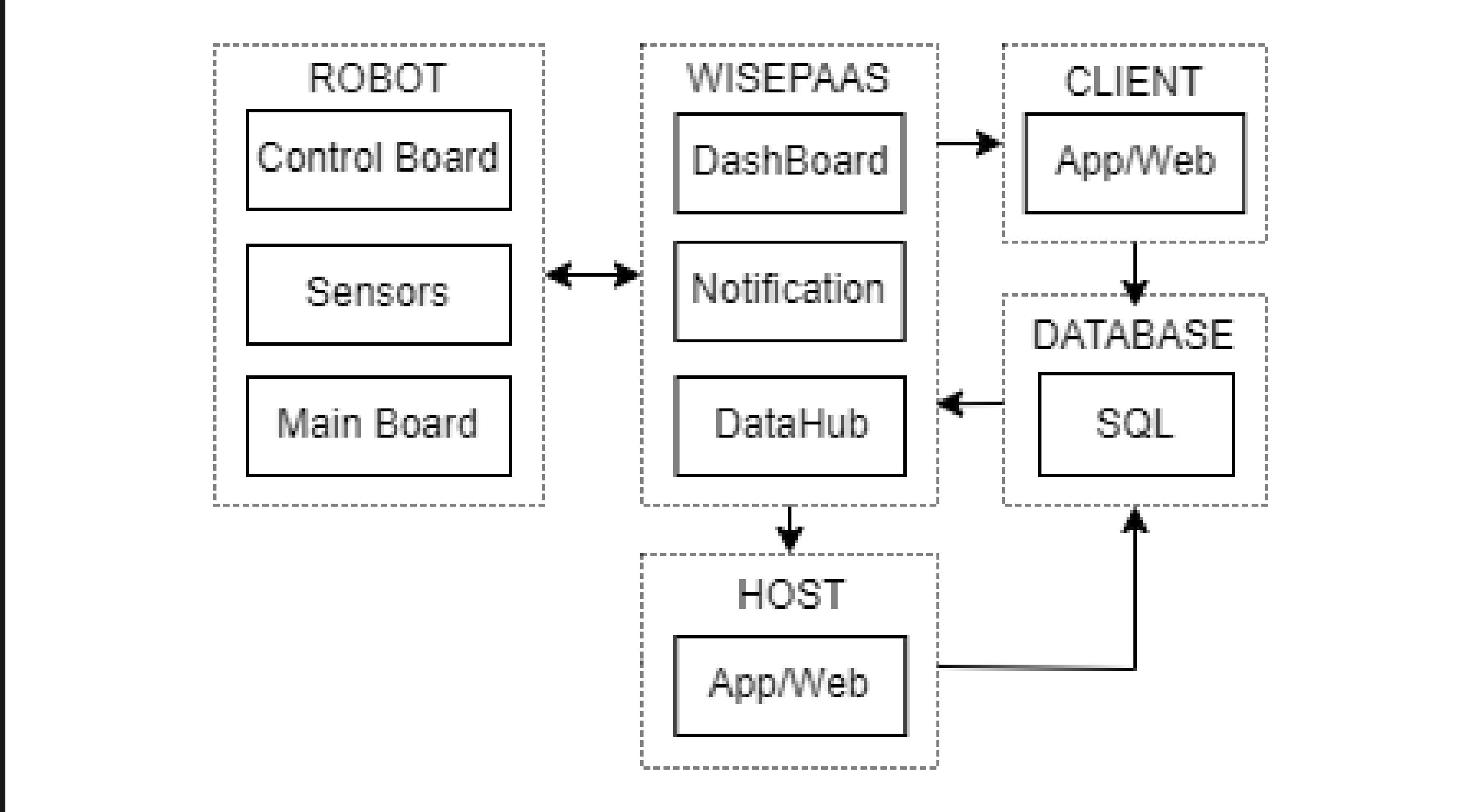


USED
TECHNOLOGY

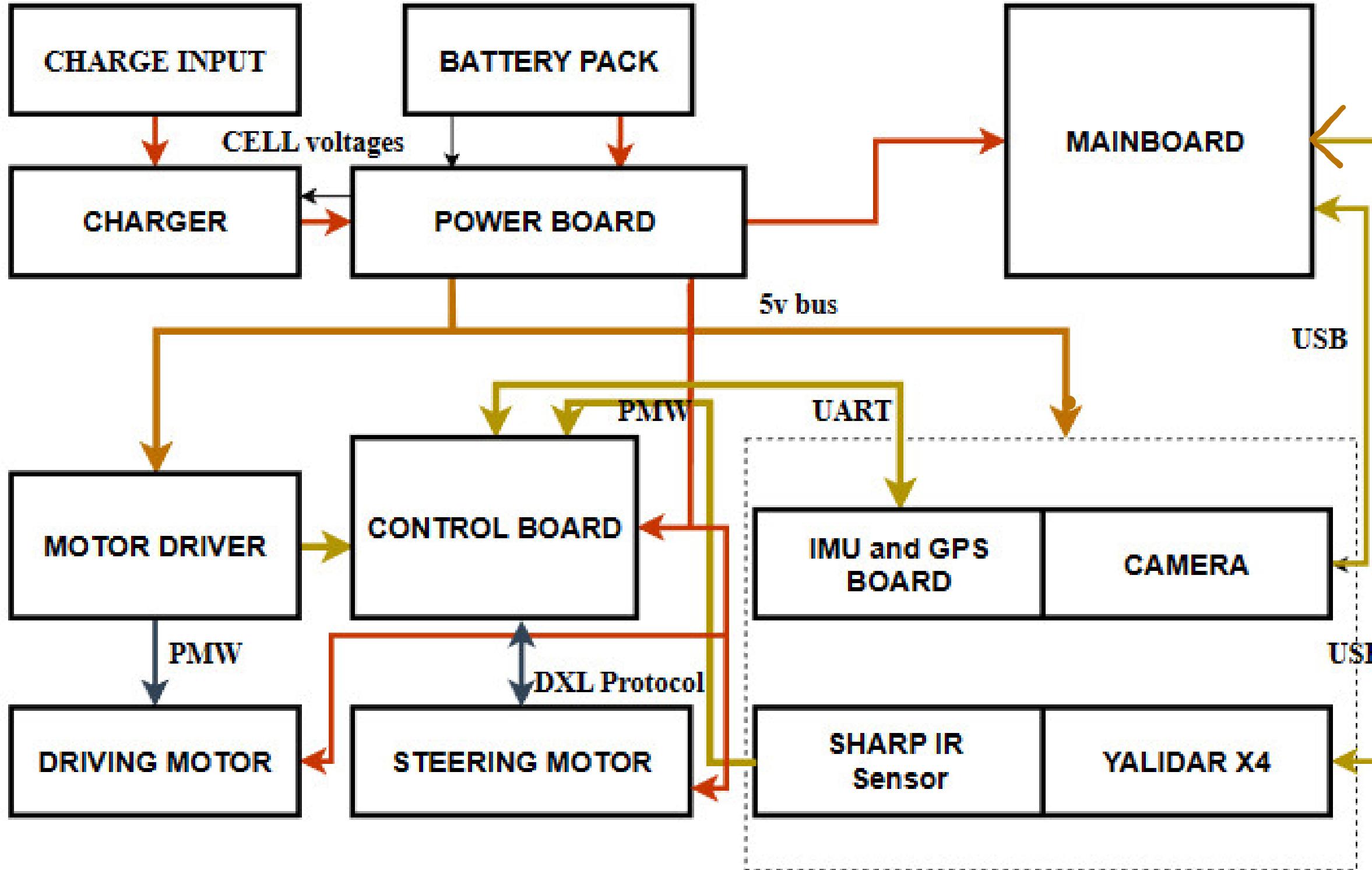
GENERAL MODEL



SYSTEM MODEL



HARDWARE MODEL



DATA PACKAGES

	Data Field
Client	- Information (Name, Phone Number, Location, Time)
Robot	- QR Code - Video Stream - GPS - Notification (Problem, Begin, Finish, Available)
Host	- Command - Confirmation

USED TECHNOLOGY

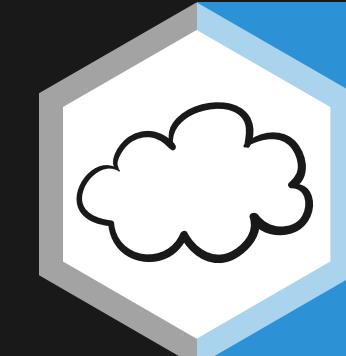
NVIDIA JETSON TX1
ARDUINO MEGA
L298N
ORBECC ASTRA DEPTH CAMERA
YDLIDAR X4
SPARKFUN IMU BREAKOUT MPU9250
SHARP IR SENSOR
NEO-M8N GPS MODULE

SEMANTIC SEGMENTATION
OBSTACLE DETECTION
SHORTEST WAY
COLLISION CHECKING
COLLISION AVOIDANCE
BUILDING MAPS

DEMONSTRATION



PRODUCT DEMO



WISE-PAAS



OBJECT DETECTION
FOR ROAD



MAP OF
HCMUTE CAMPUS

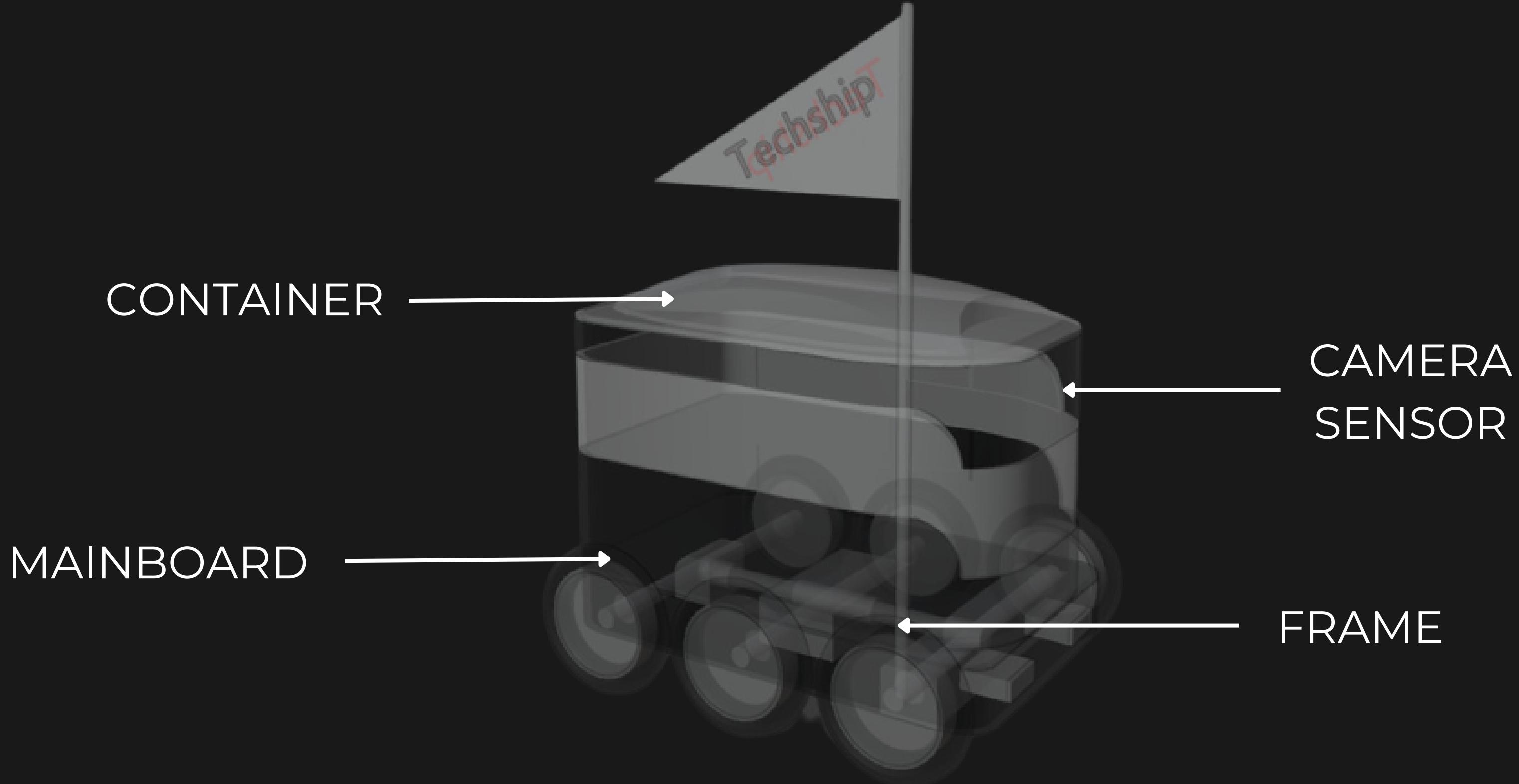


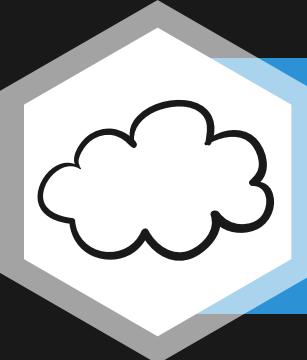
SHORTEST WAY



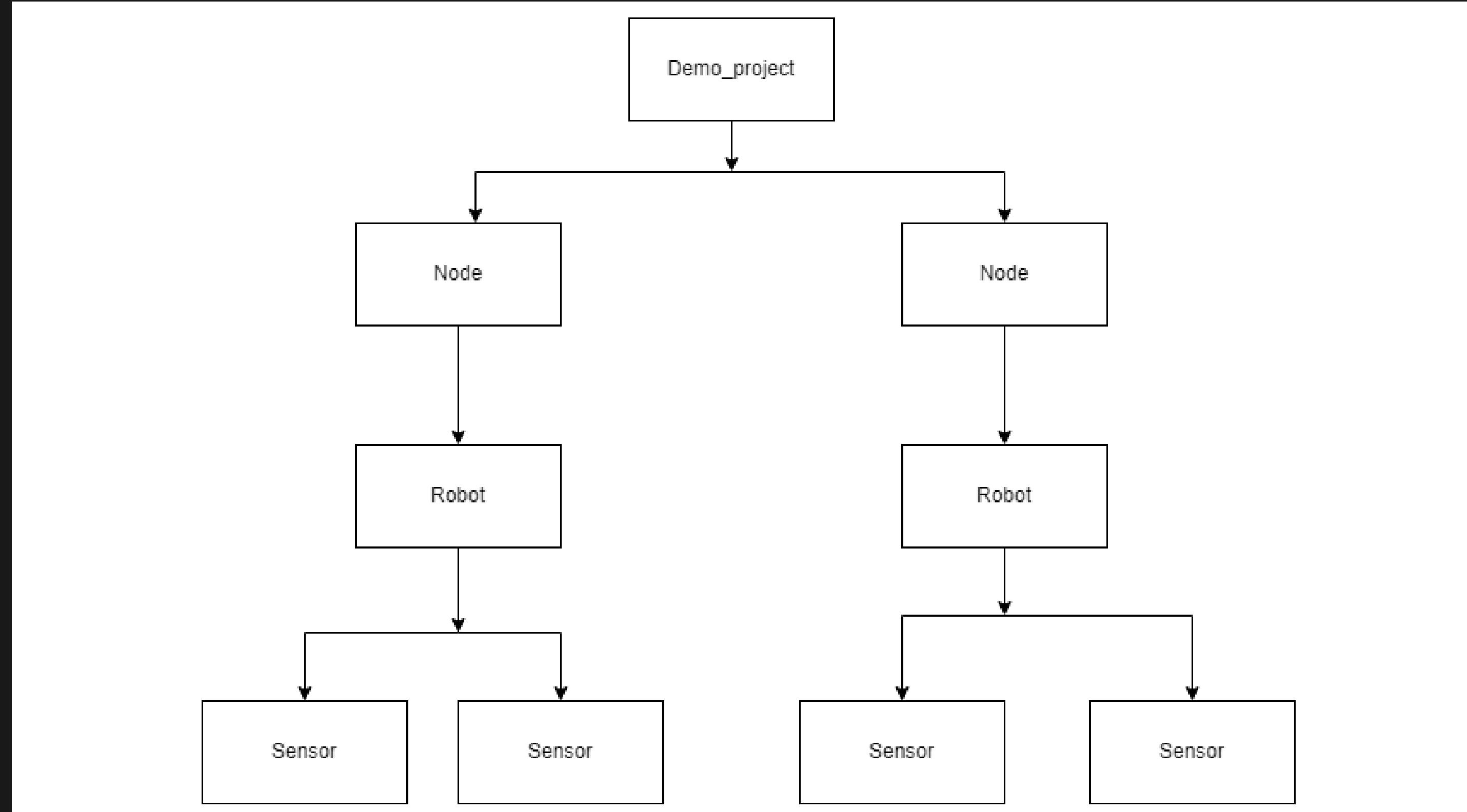
PRODUCT DEMO



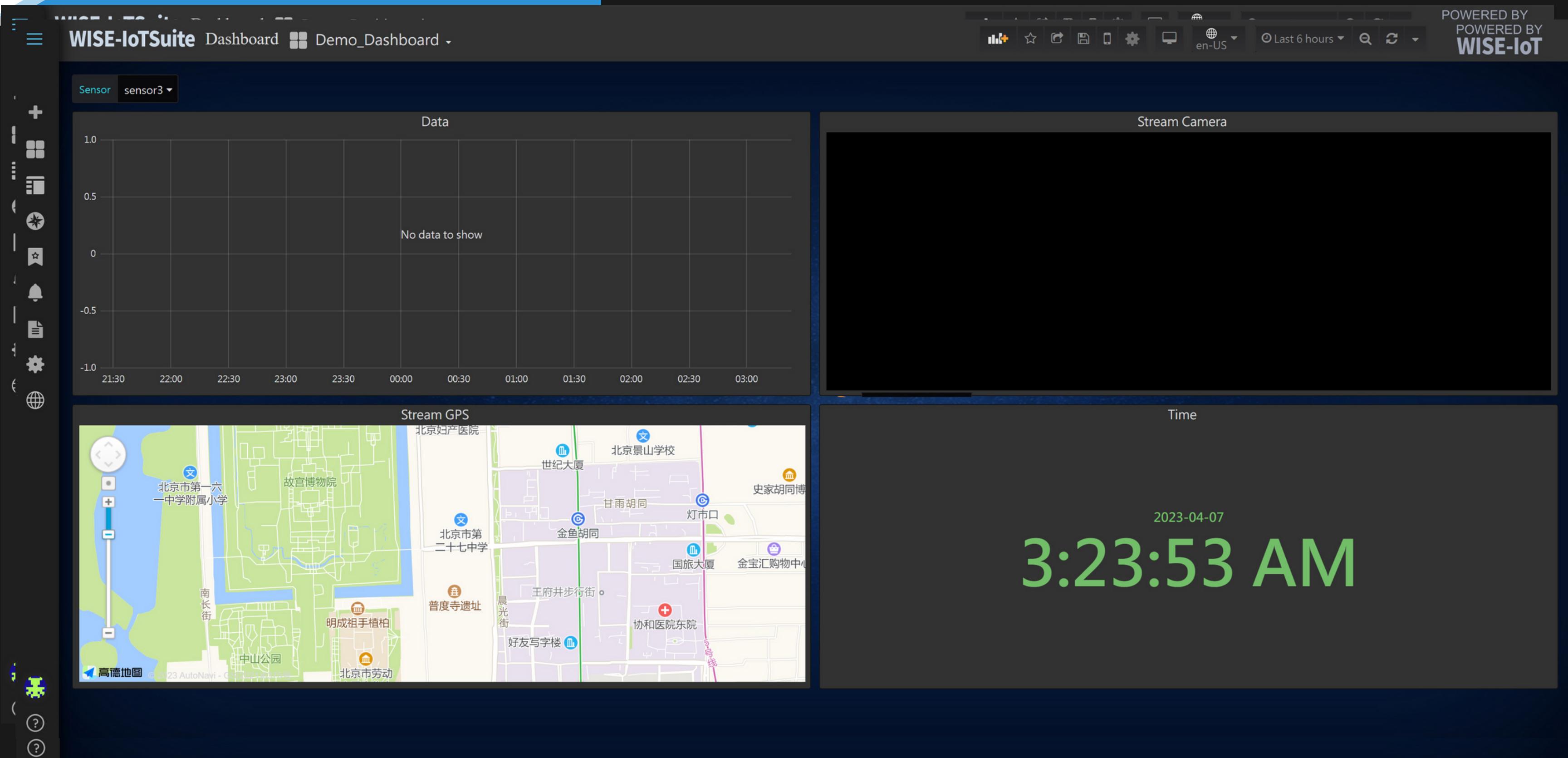




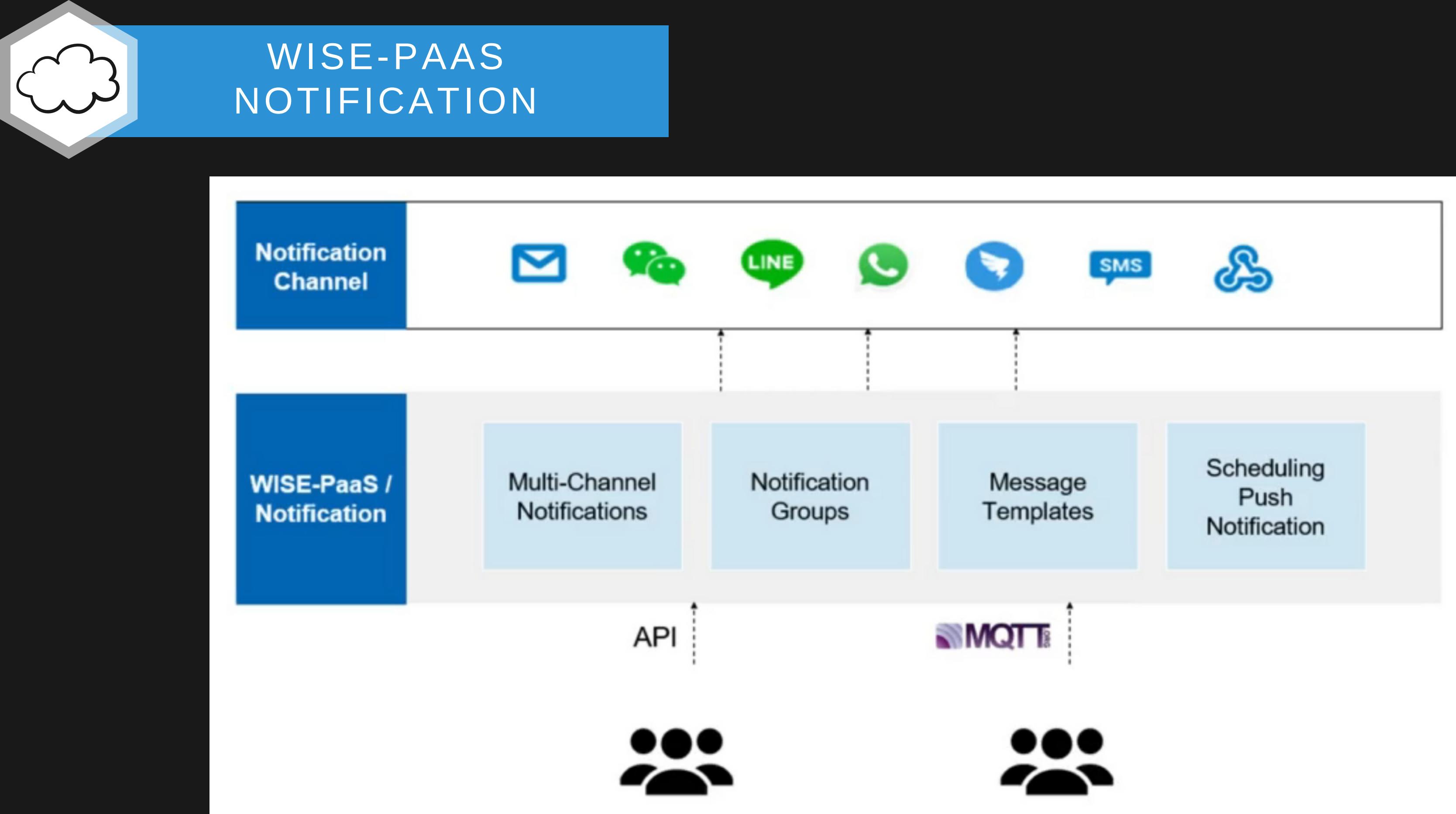
WISE-PAAS DATAHUB



WISE-PAAS DASHBOARD



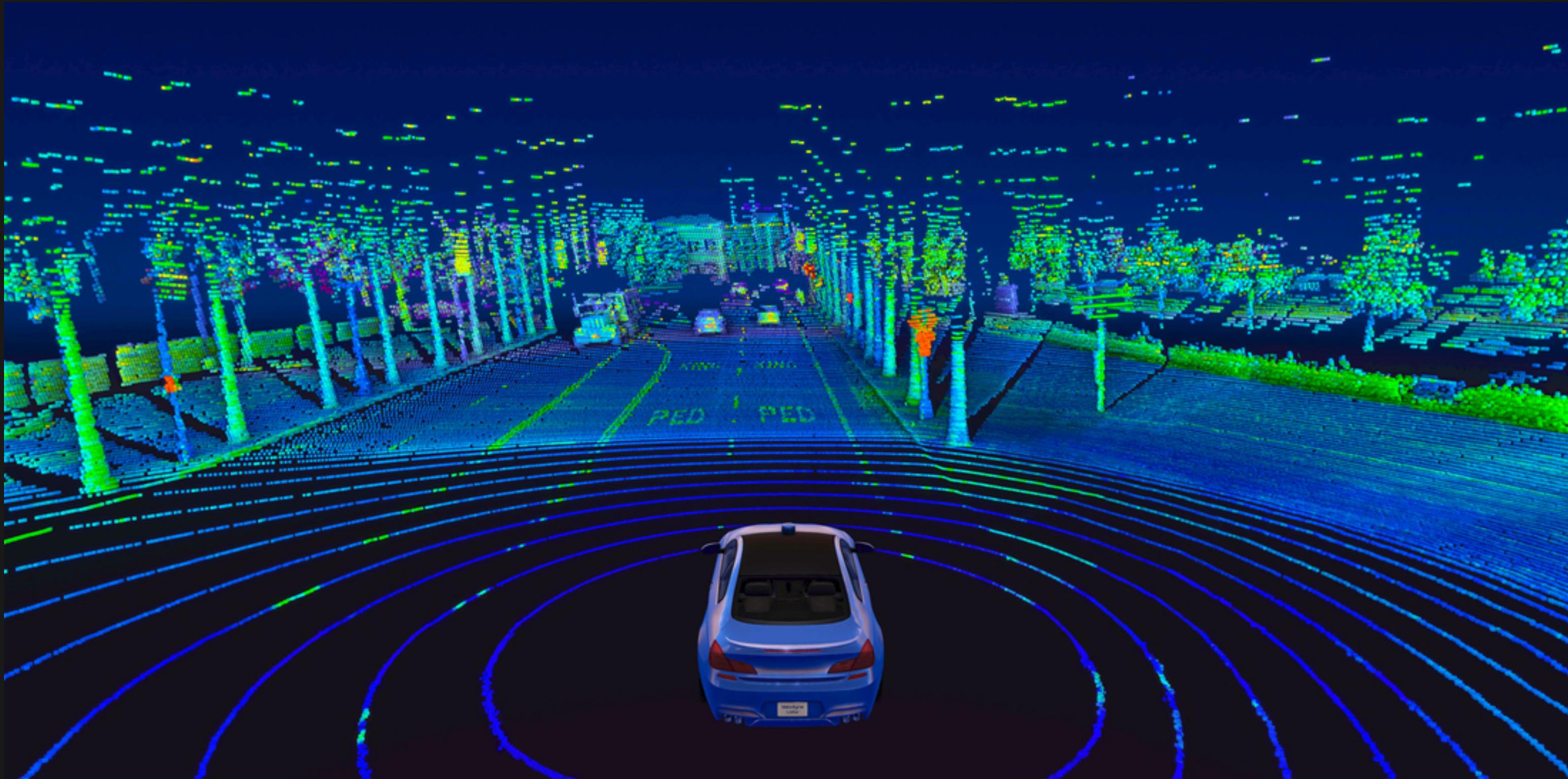
DEMONSTRATION



DEMONSTRATION

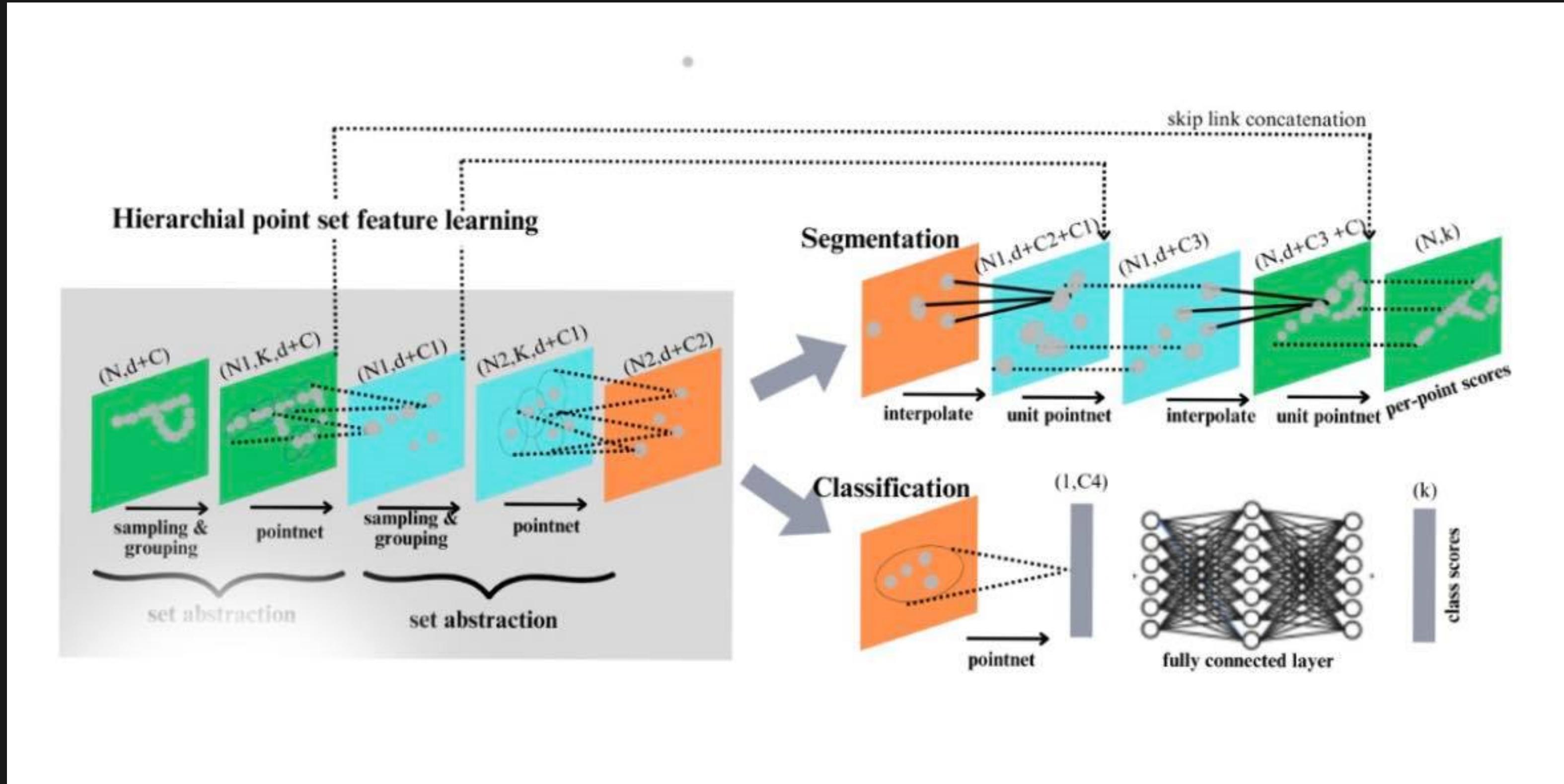


OBJECT DETECTION FOR ROADS



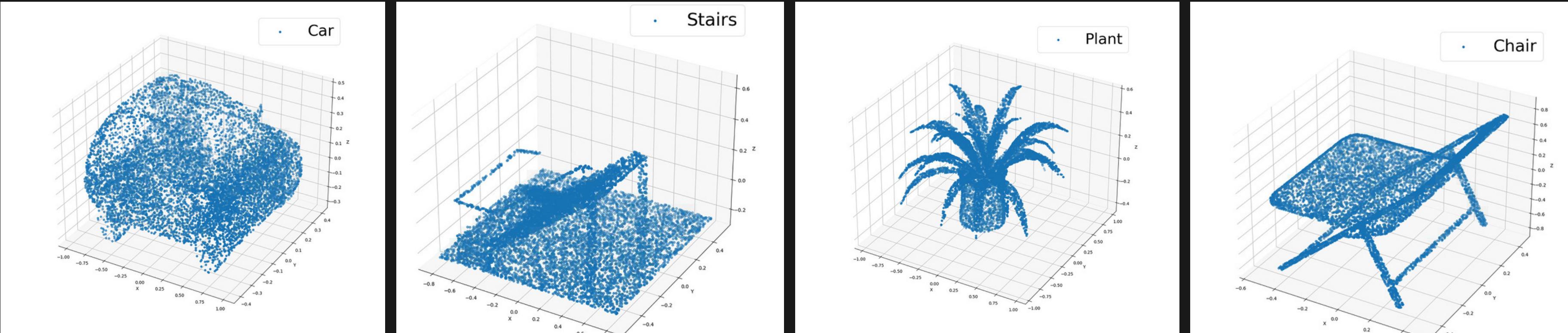
DEMONSTRATION

OBJECT DETECTION FOR ROADS





OBJECT DETECTION FOR ROADS



2023-04-06 21:02:25,151 - Model - INFO - Epoch 49 (49/50):

2023-04-06 21:03:17,945 - Model - INFO - Train Instance Accuracy: 0.900508

2023-04-06 21:03:32,244 - Model - INFO - Test Instance Accuracy: 0.877508, Class Accuracy: 0.838452

2023-04-06 21:03:32,244 - Model - INFO - Best Instance Accuracy: 0.889887, Class Accuracy: 0.843142

2023-04-06 21:03:32,244 - Model - INFO - Epoch 50 (50/50):

2023-04-06 21:04:24,784 - Model - INFO - Train Instance Accuracy: 0.903252

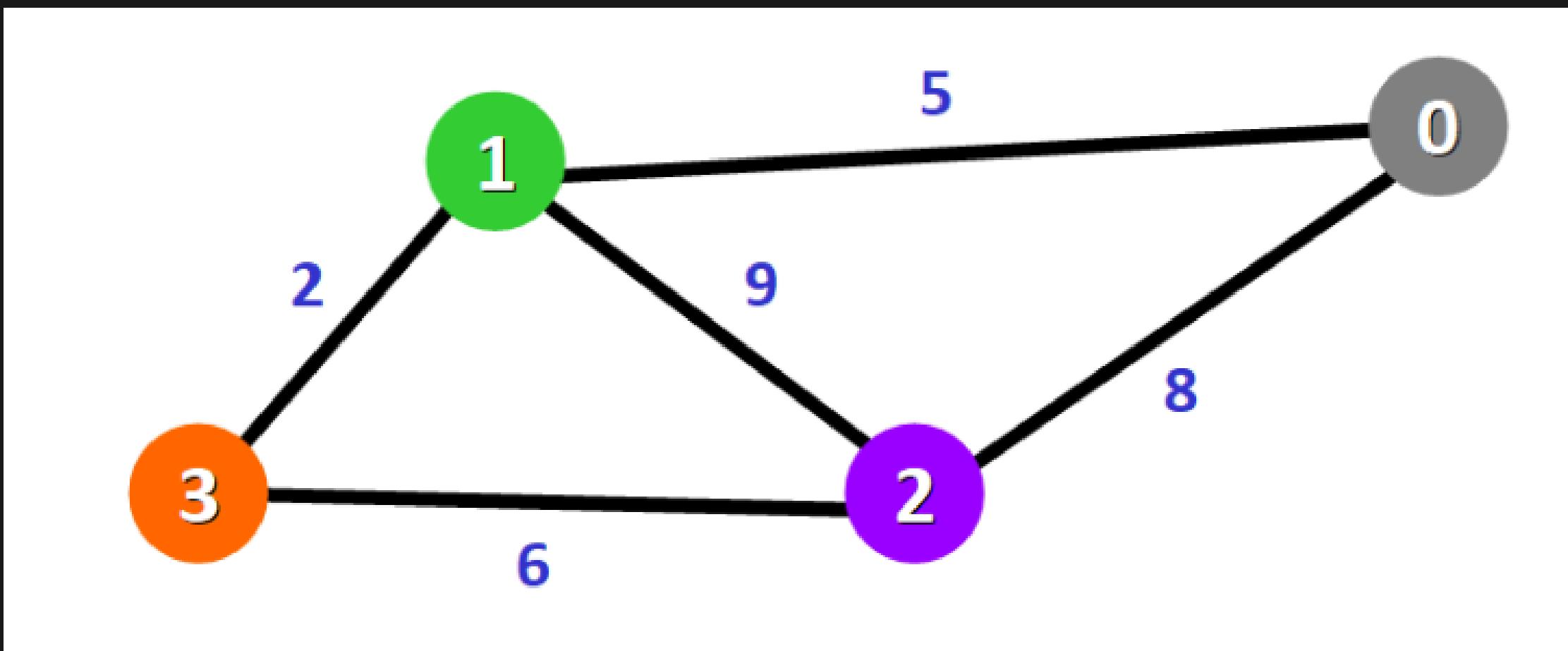
2023-04-06 21:04:39,378 - Model - INFO - Test Instance Accuracy: 0.887379, Class Accuracy: 0.834554

2023-04-06 21:04:39,378 - Model - INFO - Best Instance Accuracy: 0.889887, Class Accuracy: 0.843142

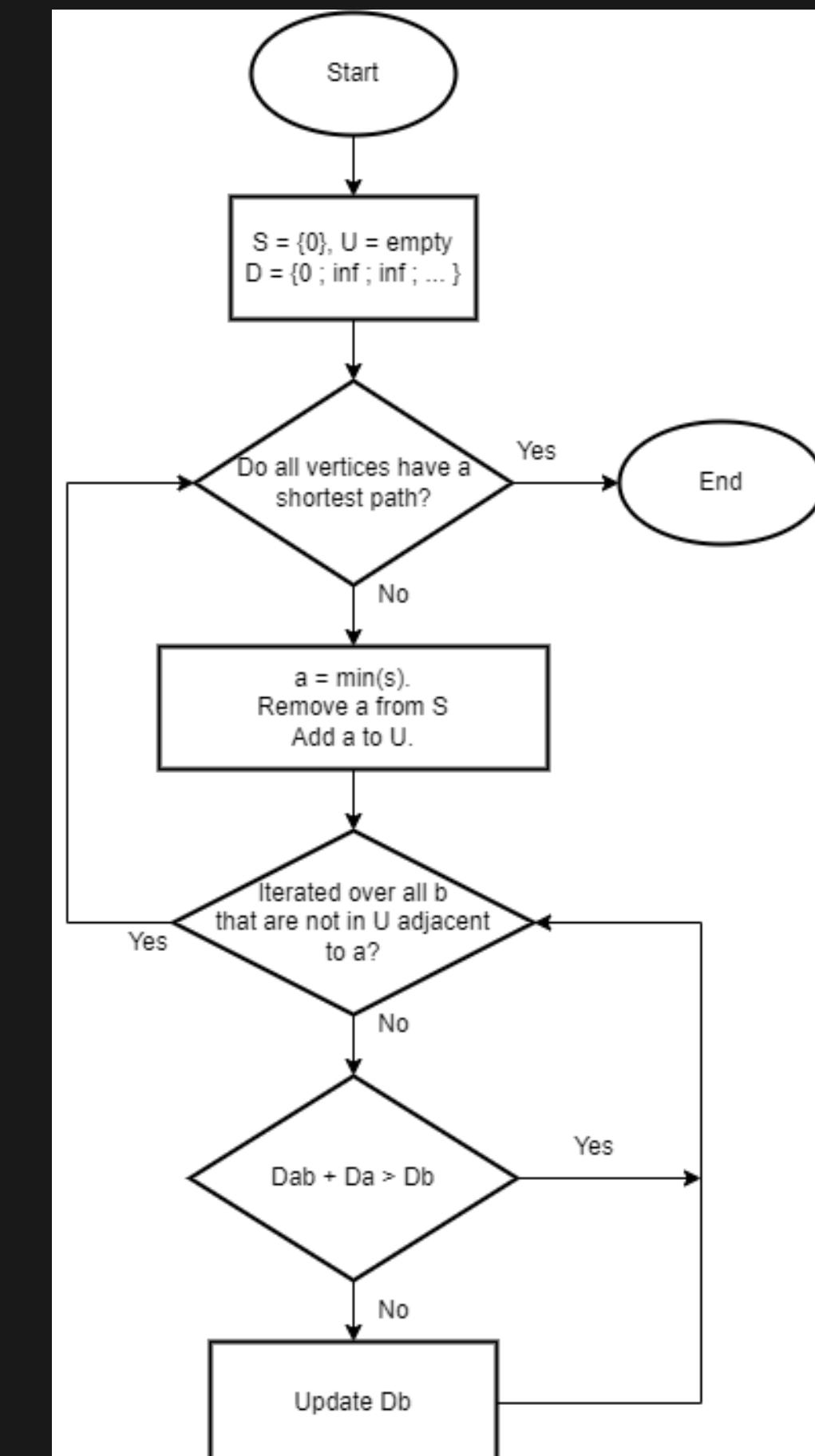
2023-04-06 21:04:39,378 - Model - INFO - End of training...



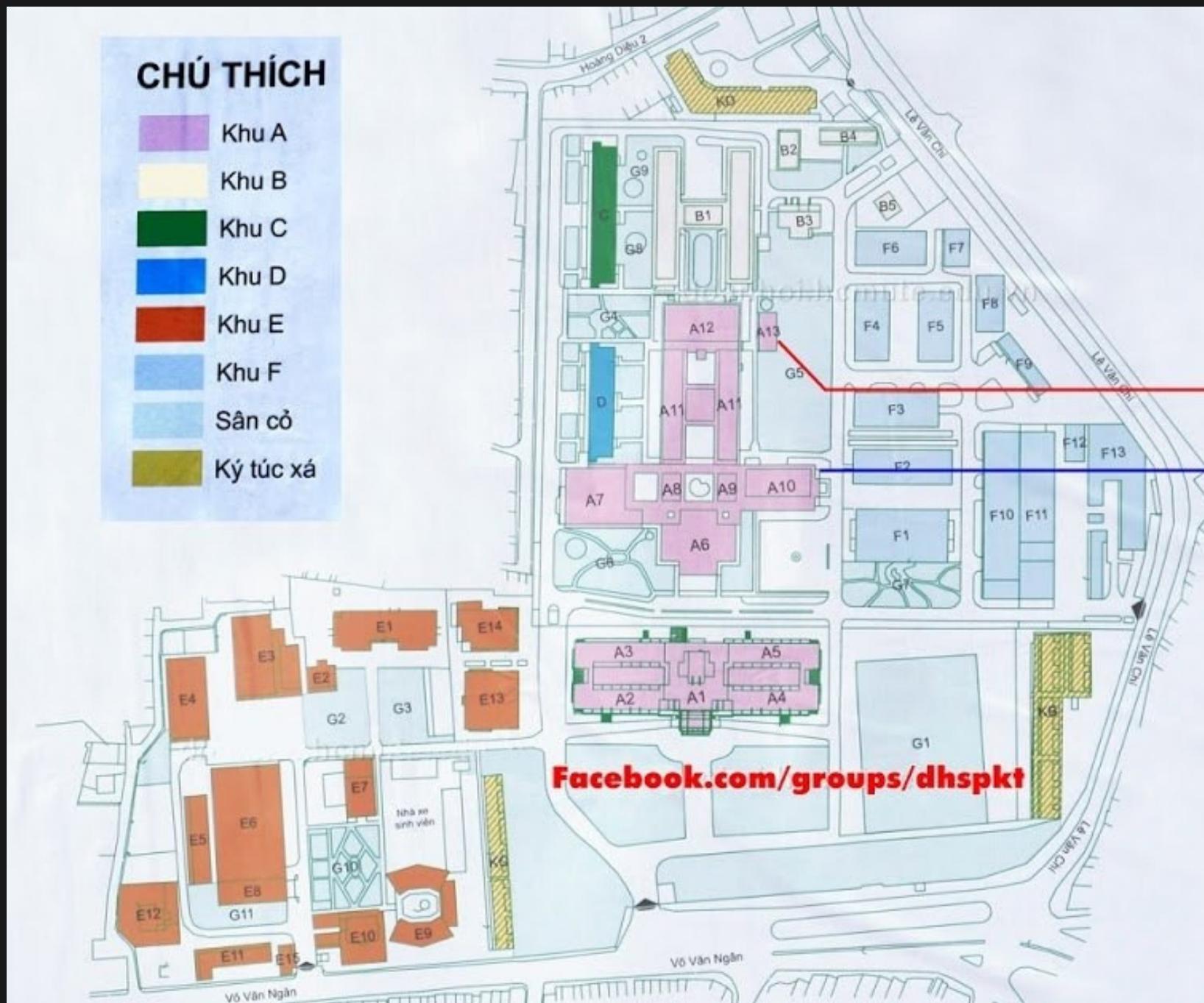
DIJKSTRA ALGORITHM



Step	0	1	2	3
0	0	inf	inf	inf
1	-	5	8	inf
3	-	-	8	7
4	-	-	13	-



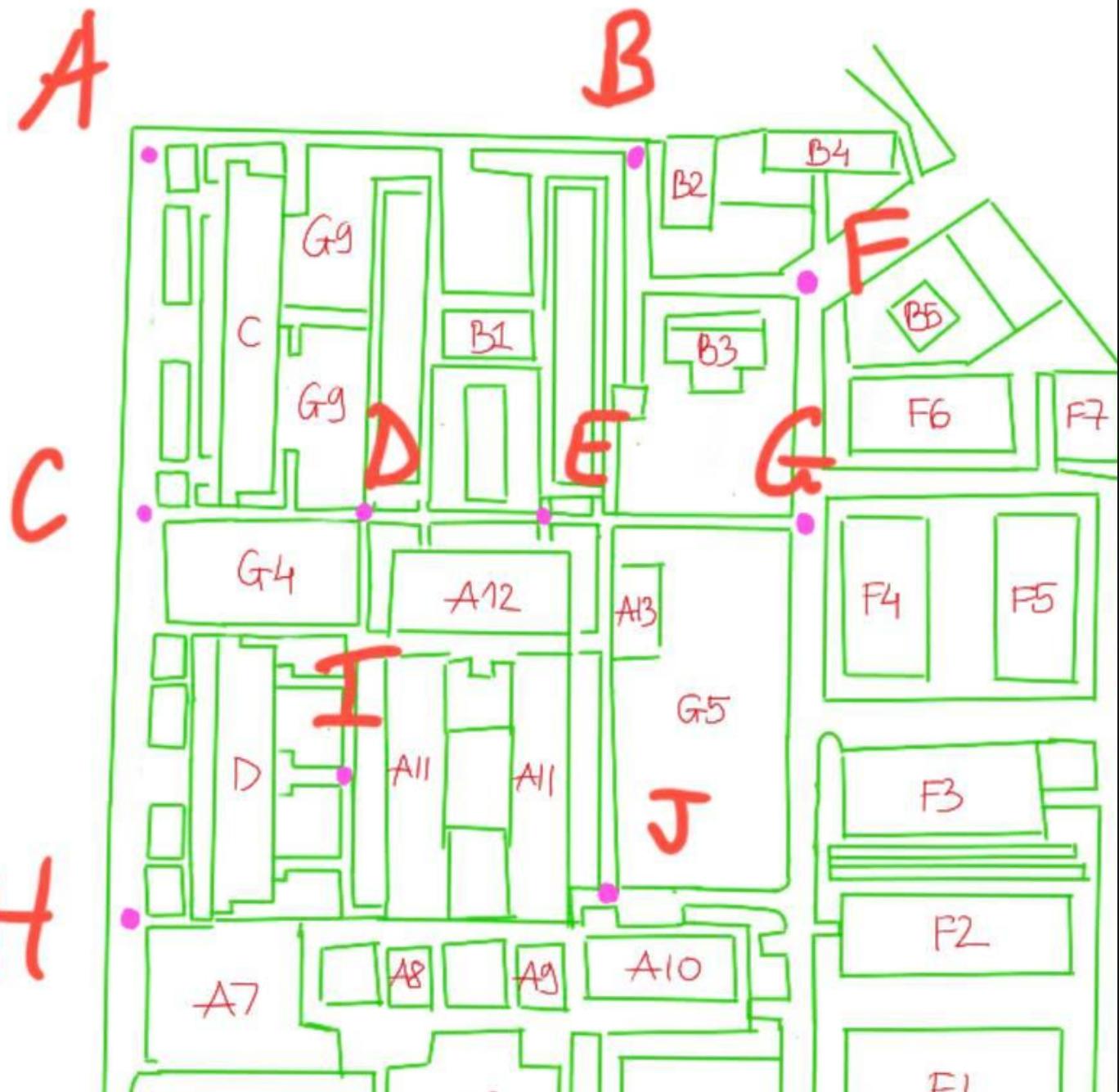
FLOWCHART



SCHEMATIC DESIGN



SHORTEST WAY



Start	Shortest Path	Destination	Cost
D	D - C - A	A	140
D	D - E - G - F - B	B	220
D	D - C	C	50
D	D - E - G - F	E	150
D	D - E	F	40
D	D - G	G	90
D	D - C - H	H	140
D	D - I	I	60
D	D - E - J	J	140

FIND THE SHORTEST PATH

CONCLUSION

PRODUCT

WISEPAAS

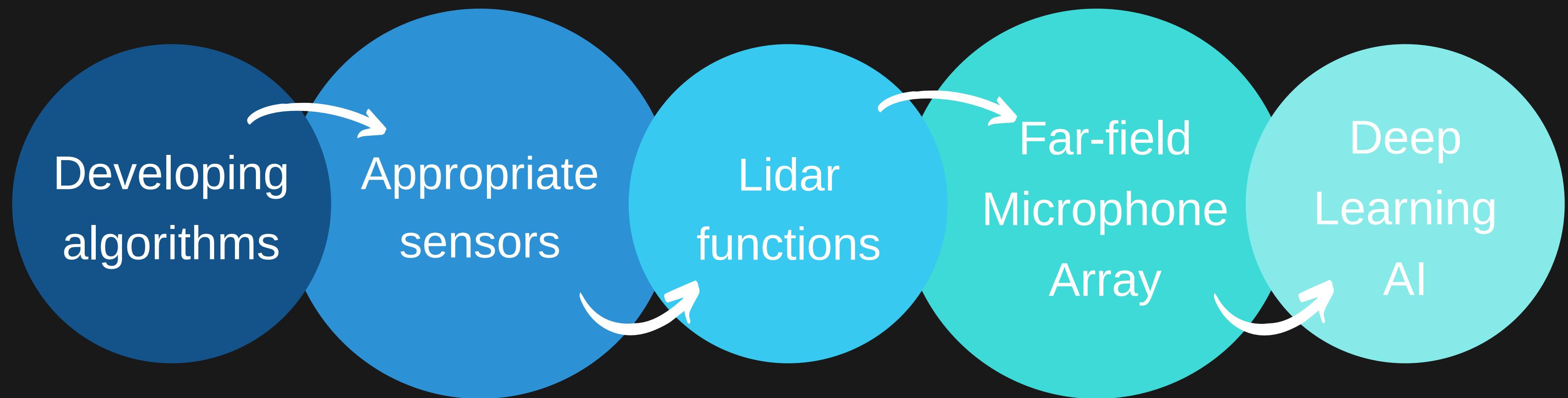
WEB
APP

ALGORITHM
DATA

APPLICATION

55%

FUTURE WORK



DIFFERENCE

PROVIDE WEB/APP

SHORTEST WAY

BUILDING MAPS



THANK YOU FOR YOUR ATTENTION

DO YOU HAVE ANY QUESTIONS FOR US?

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