



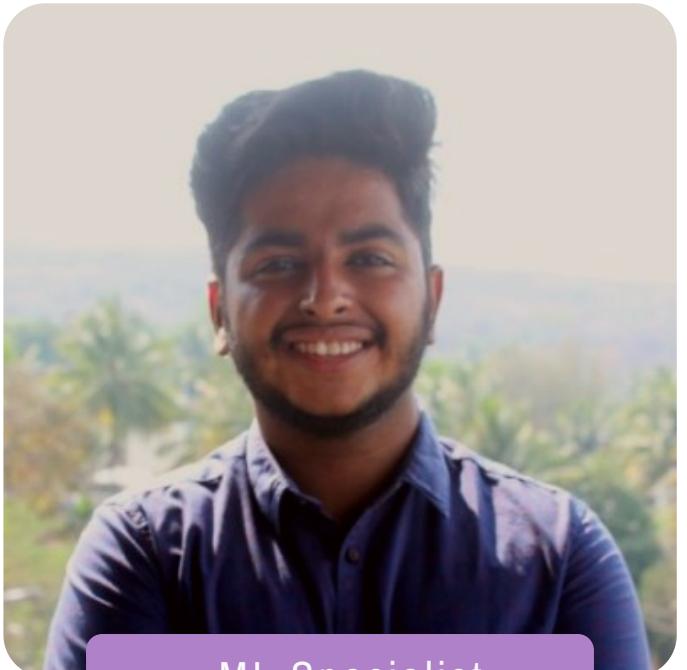
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PRODIGI
Digitizing Products and Resources

VARS



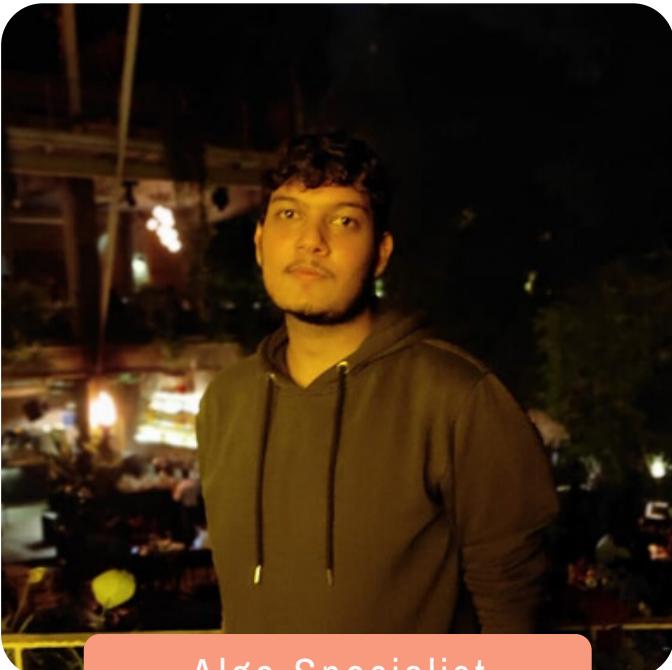
TEAM MEMBERS



ML Specialist

Rithuraj Nambiar

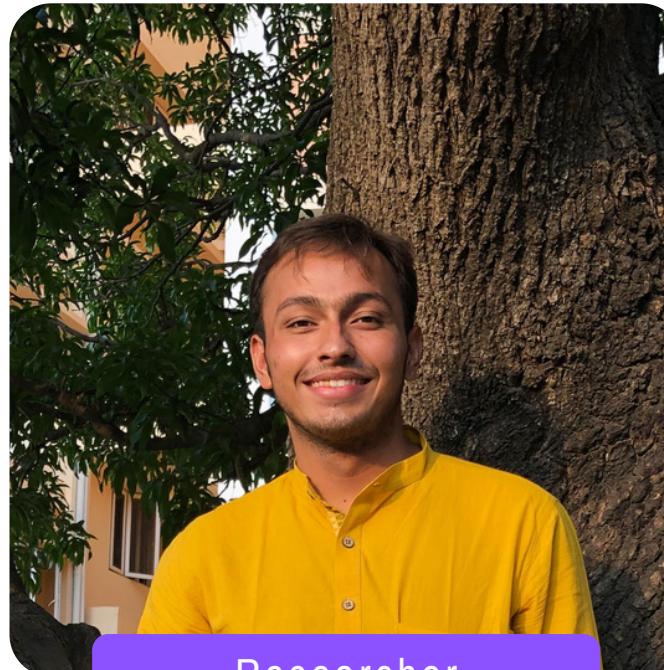
Technical Team Lead at AI Club,
VIT Bhopal, ML Intern at Bluepen



Algo Specialist

Vedanshu Sharma

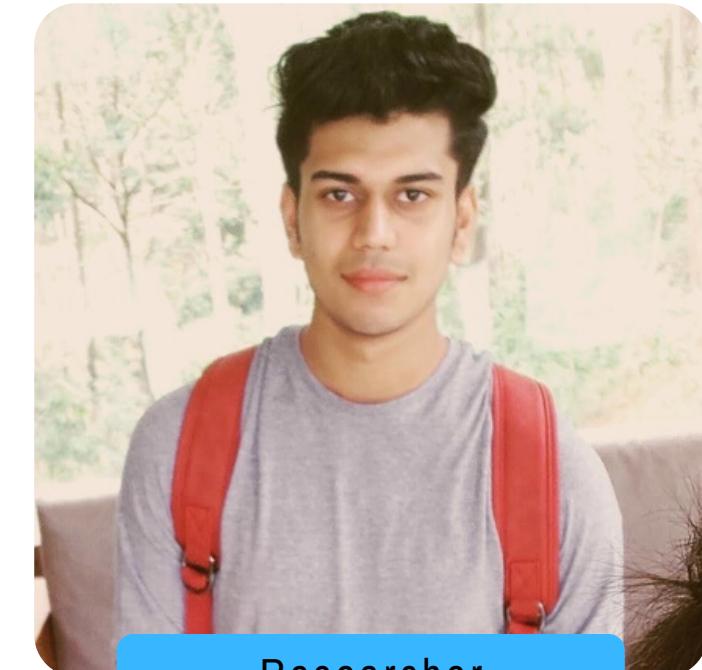
Ex-Power Train Team Head at
Team GarVIT, VIT Bhopal



Researcher

Aryan Tiwari

Strong hold over Data
Structures and Algorithm

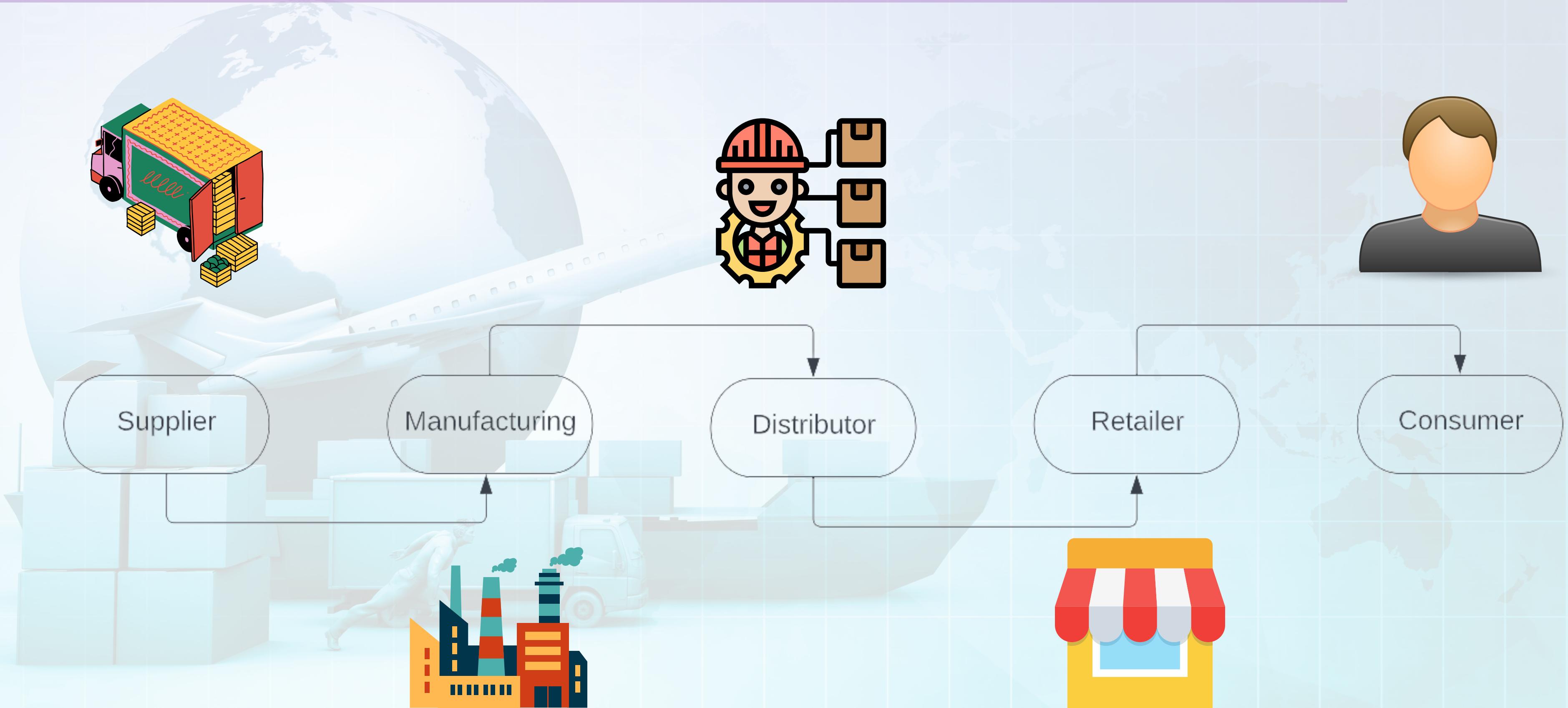


Researcher

Saksham Gupta

Ex-Social Media Team Lead at
Team GarVIT, VIT Bhopal

TRADITIONAL SUPPLY CHAIN CYCLE



INDUSTRY RESEARCH

We have talked to two industrial personnel to get professional opinion about the challenges and opportunities in Supply Chain Management!



Rajeevan
Nambiar
DGM West -
Bambino Pasta

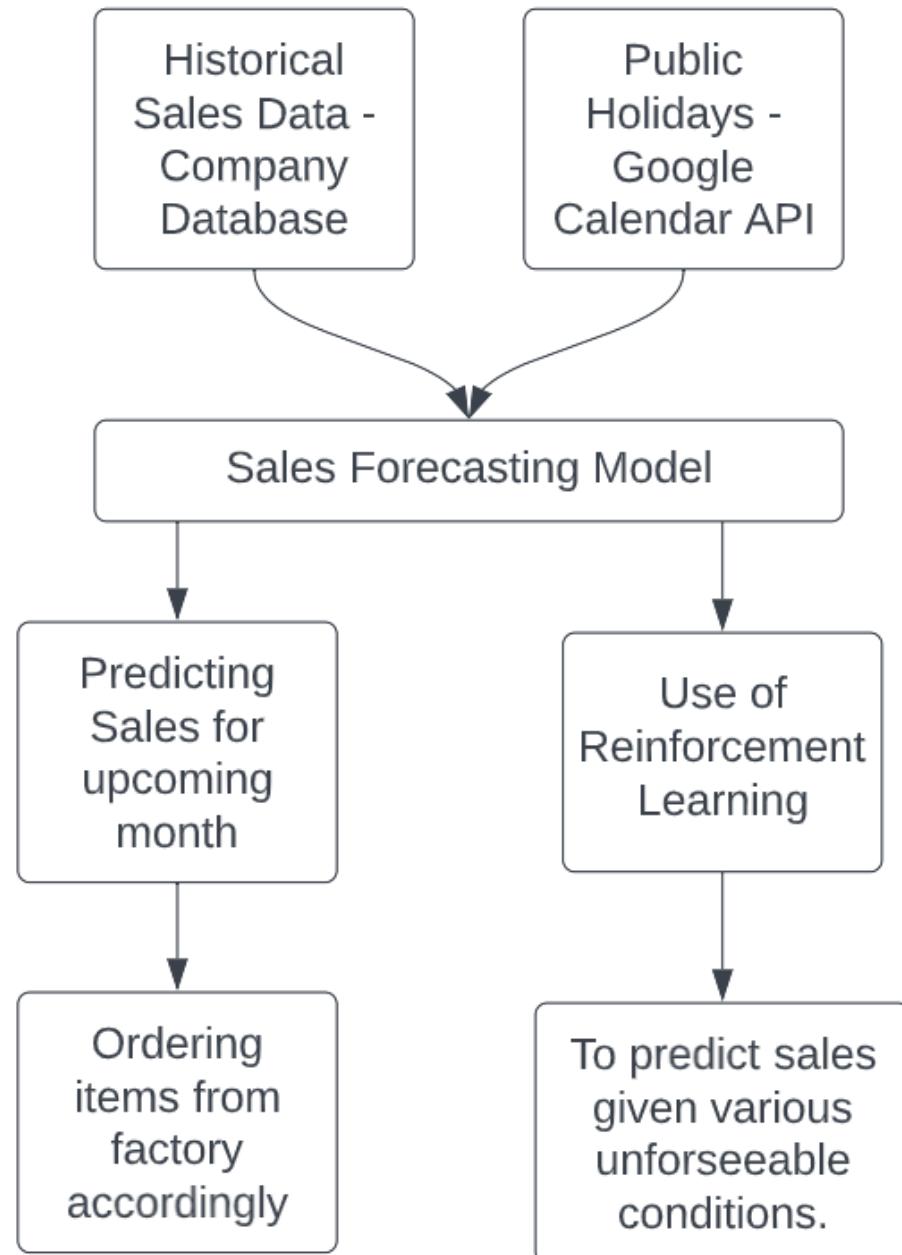
- Increased prices due to costly logistics
- Delivery of old stock, creating consumer issues
- Maintaining hygiene in warehouses and factories



Thom Ives
Sr. Data
Scientist -
Echo Global
Logistics

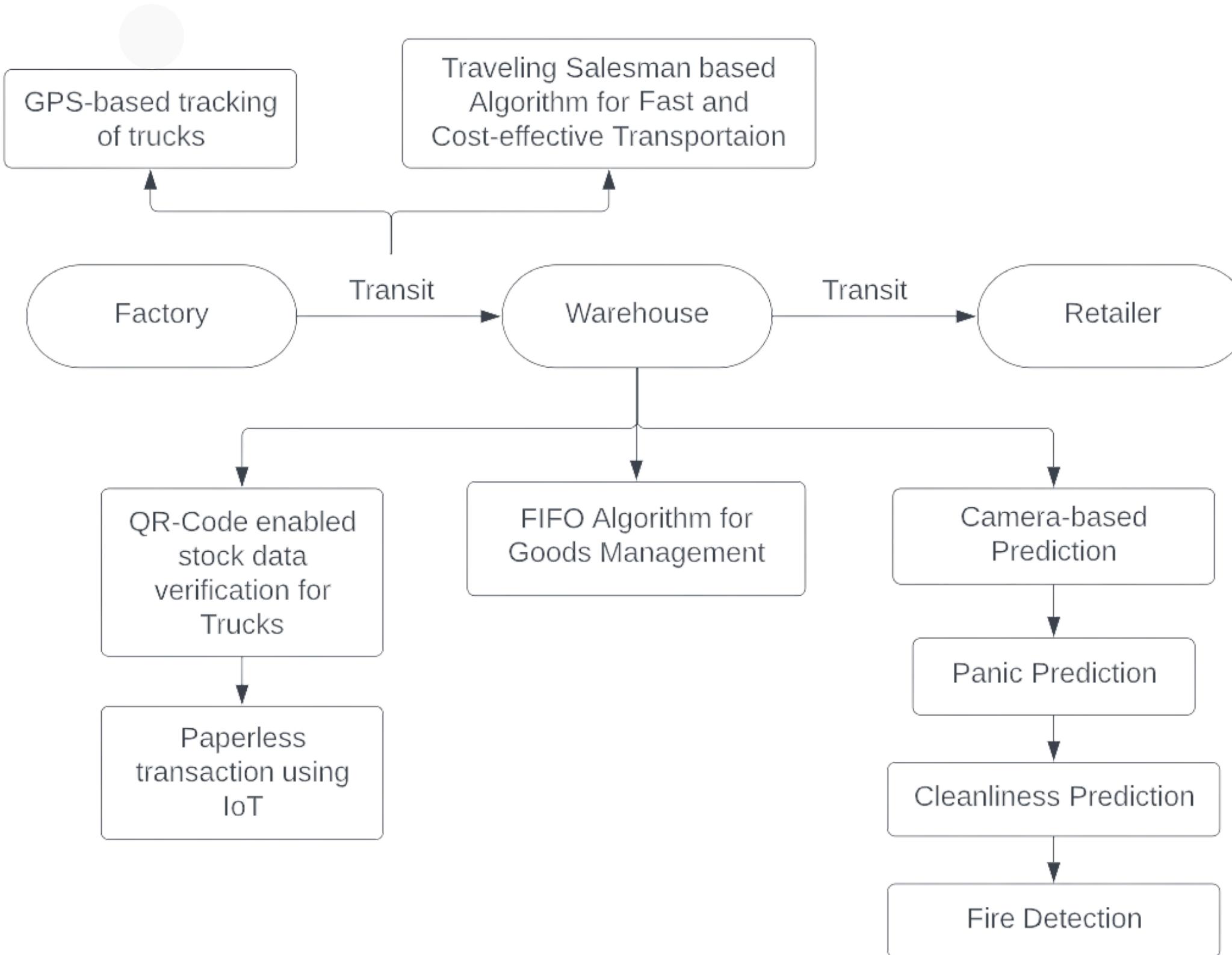
- Pyomo can be used for optimizing supply chain problems
- AI and Supply Chain has lot of potential to be harnessed

SALES FORECASTING SYSTEM



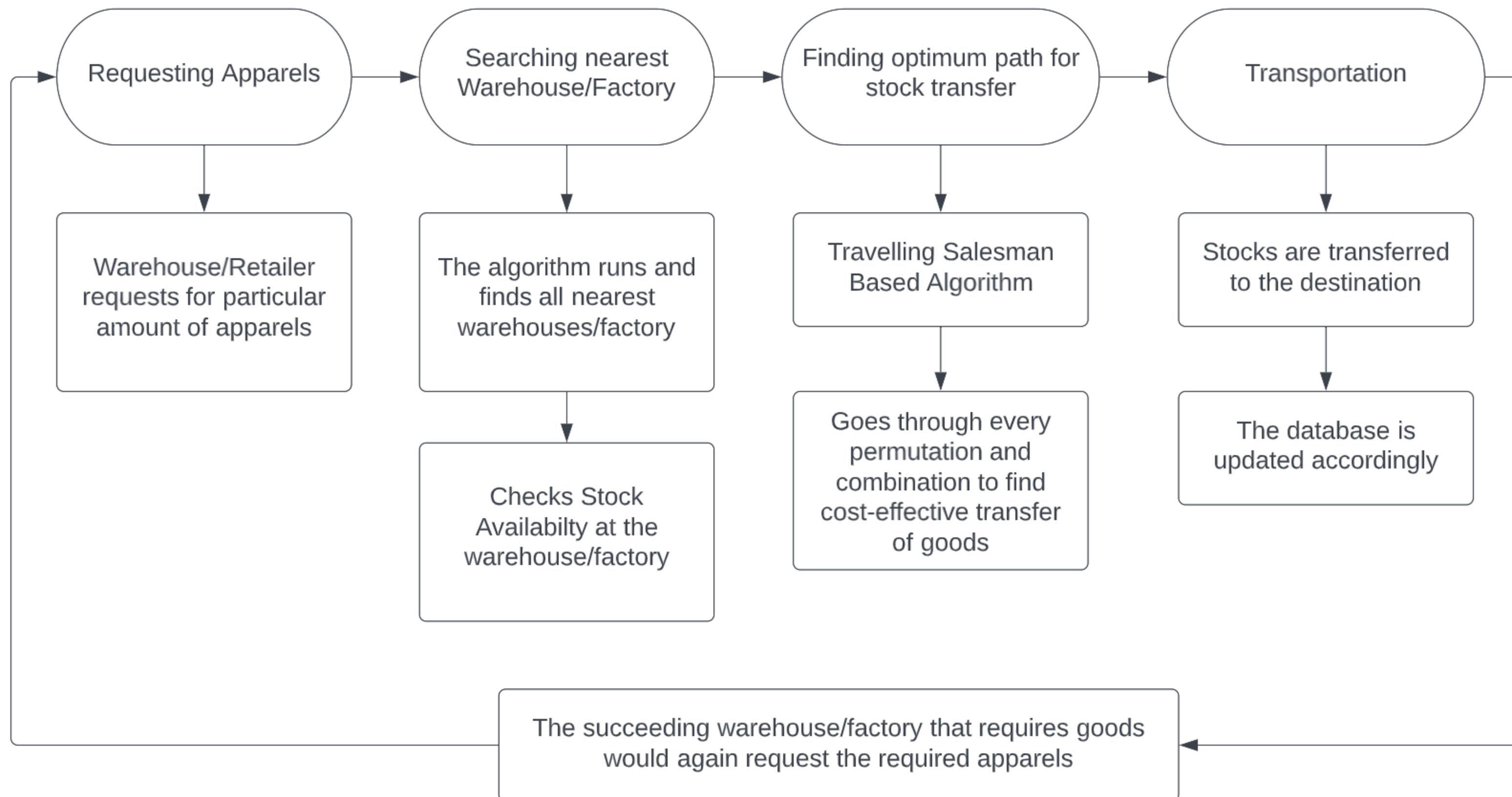
- ✓ Historical data would be collected from company database, and Google Calendar API along with Accuweather API to get current holidays and weather conditions.
- ✓ Using reinforcement learning would help to not only use public holidays and weather conditions as a factor for sales but also to predict under unforeseeable situations
- ✓ This would ensure optimum stock available at any time and no stocks would go waste or stay lying around in warehouses.

PROPOSED SOLUTION



- ✓ The GPS-tracking would provide live-tracking service to both source and destination along with the retailer for whom the goods are meant for.
- ✓ FIFO Algorithm would be implemented so that the items that arrived first would leave first thus no old stock would arrive at the retailer.
- ✓ Camera would be placed in such a way that three prediction algorithms can be implemented at the same time.
- ✓ Every warehouse would have scanners implanted at entrance and exit so that the QR code can be scanned.

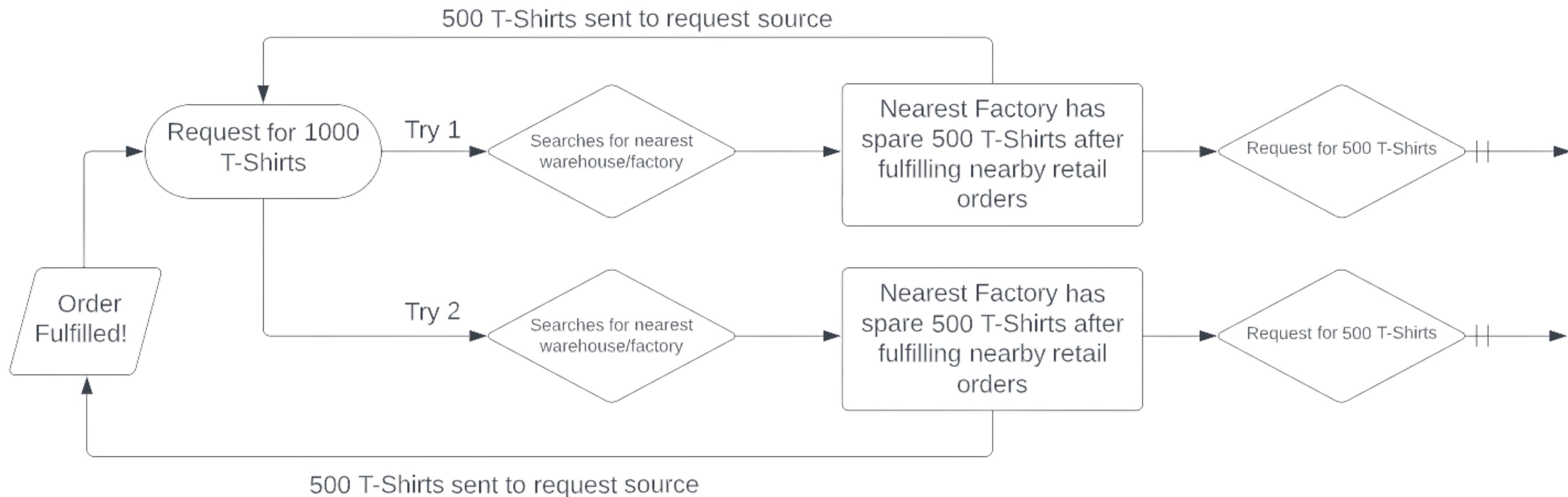
TRANSPORT OPTIMIZATION



EXAMPLE OF SHIPMENT

✓ While searching for nearest factory/warehouse, optimum cost-efficiency is checked for using algorithm similar to Travelling Salesman Problem

✓ Even if nearest warehouse has partial stocks, but a much further warehouse has full stock availability and the transportation cost is less than for nearest warehouse, then the second way would be preferred.



INNOVATION AT TRUCK-LEVEL



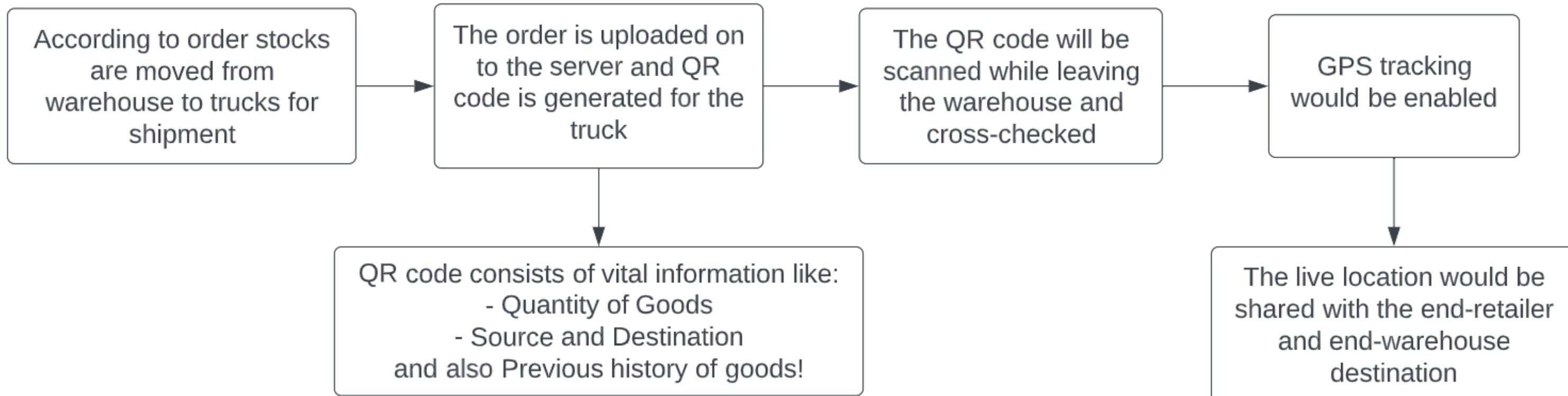
GPS-trackers can either be integrated navigation system with the vehicle or miniature trackers can be fixed to detect real-time movement



We have started working on QR-code generation software for trucks.



Using IoT applications, we are going paperless for transport transactions



QR-INVENTORY

```
1 import pyqrcode
2 import png
3 import hashlib
4 from pyqrcode import QRCode
5 from pyzbar.pyzbar import decode
6 from PIL import Image
7
8 def QR_gen(noTshirts, noJeans, noShirts, noPants, noShoes, Source, Destination):
9     QRs = str(noTshirts) + "@" + str(noJeans) + "@" + str(noShirts) + "@" + str(noPants) + "@" + str(noShoes) + "@" + Source + "@" + Destination
10    Enc_Qr = hashlib.sha256(QRs.encode())
11    Enc_Qr = str(Enc_Qr.hexdigest())
12    QR = pyqrcode.create(QRs)
13    QR.png(Enc_Qr+".png", scale = 6)
14
15 def qr_decode(img_path):
16     decocdeQR = decode(Image.open(img_path))
17     text = decocdeQR[0].data.decode('ascii')
18
19     data = text.split('@')
20     dataDict = {}
21
22     dataDict['noTshirt'] = data[0]
23     dataDict['noJeans'] = data[1]
24     dataDict['noPants'] = data[2]
25     dataDict['Shoes'] = data[3]
26     dataDict['Source'] = data[4]
27     dataDict['Desitnation'] = data[5]
28
29     return dataDict
30
31 #Generating QR Code
32 QR_gen(100,20,56,89,90,"Bhopal", "Ashta")
33
34 #Reading QR Code
35 res = qr_decode()
36 print(res)
```



SOLUTIONS

PREDICTION SYSTEM

Use of reinforcement learning would help to predict future requirement of items under unforeseeable circumstances using data from different sources.

TSP-LIKE ALGORITHM

Using TSP-like algorithm would ensure transportation of goods to destination in cost and time-efficient manner.

TRACKING TRUCKS

Using QR Codes to track goods inside the truck and GPS to track the truck, to get timely updates about transit.

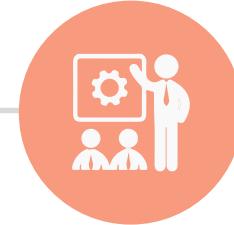
CONCLUSION



The idea would be automizing most of the manual task like, generating invoice for each transit, predicting stock requirement.



The idea has been implemented using various technologies and thus have various novelties.



Most of the ideas are easily scalable and can be implemented with adequate research and development



THANK YOU

