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CME355 - MATERIAL HANDLING AND SOLID PROCESSING EQUIPMENT

UNIT 2 - Automated guided vehicles theory

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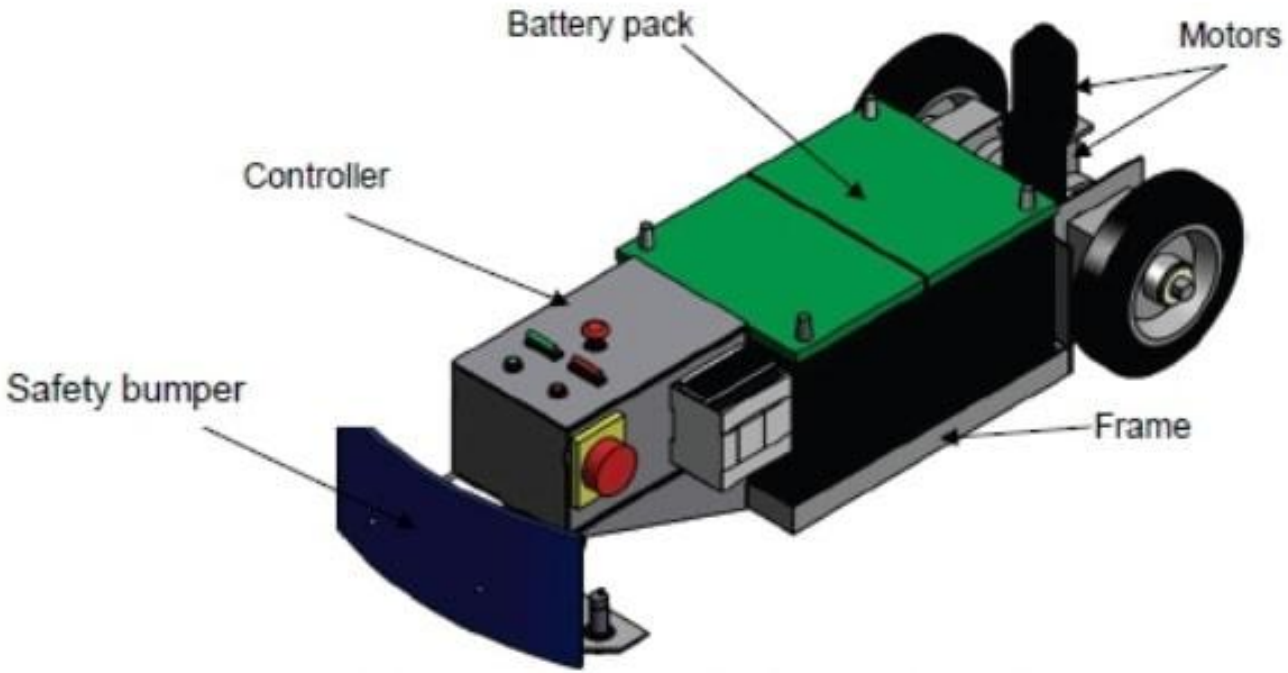
The Components of AGV



CAD model of the initial AGV platform

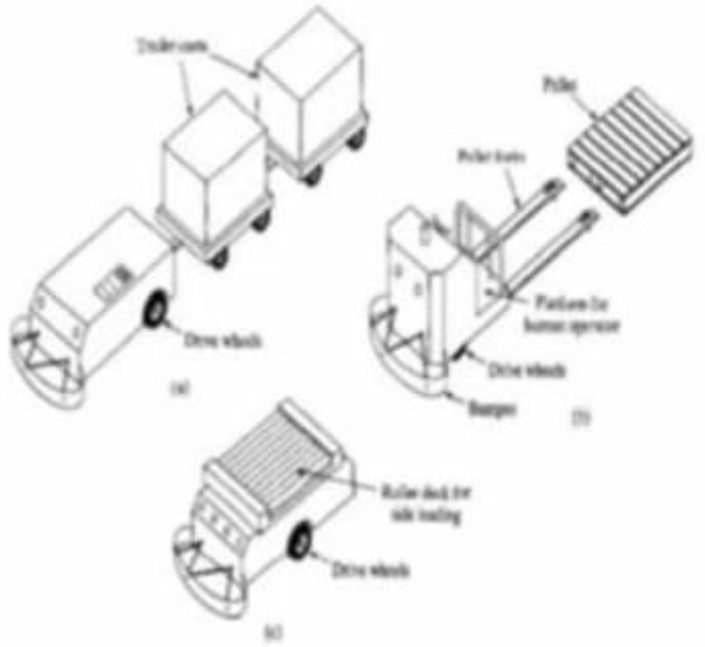
What are AGVs:

- ***Automated guided vehicle (AGV) is a computer-controlled,***
- ***wheel-based vehicle used mainly complete simple,***
- ***repetitive tasks such as loading and unloading goods,***

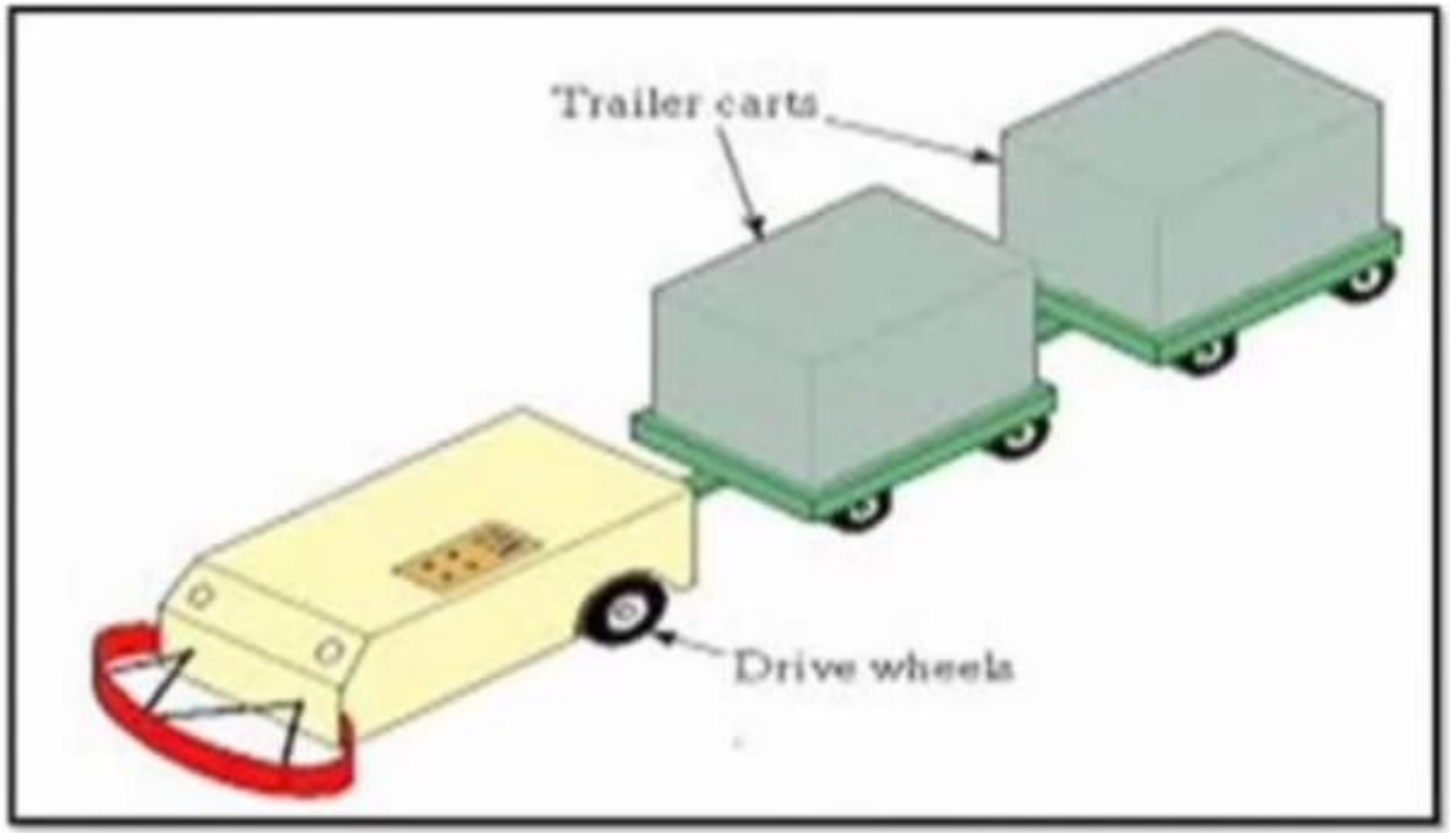
✔ It is also one of the key technologies in smart factory

TYPES OF AUTOMATIC GUIDED VEHICLE

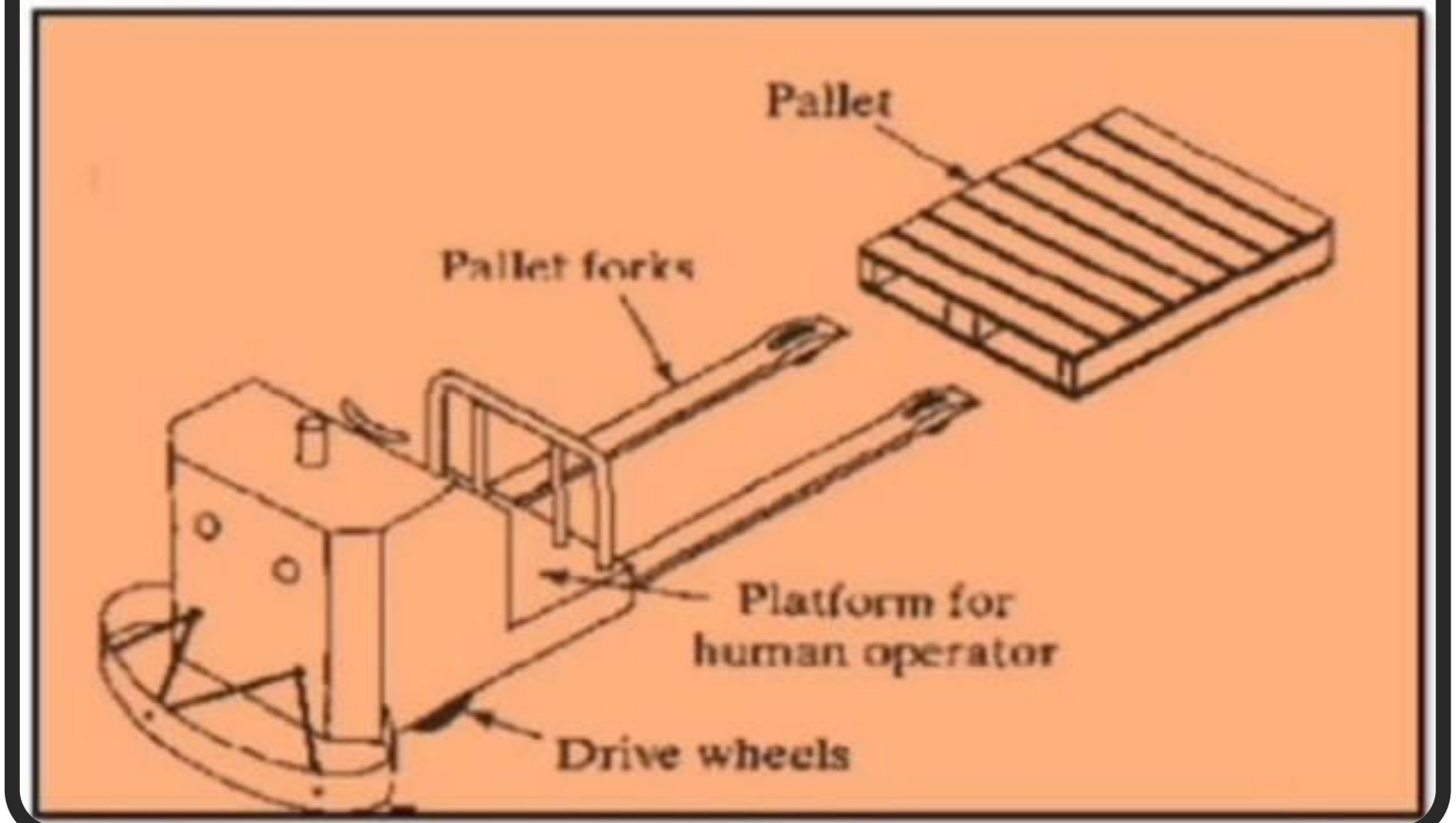
- DRIVERLESS TRAIN
- PALLET TRUCKS
- UNIT LOAD CARRIERS



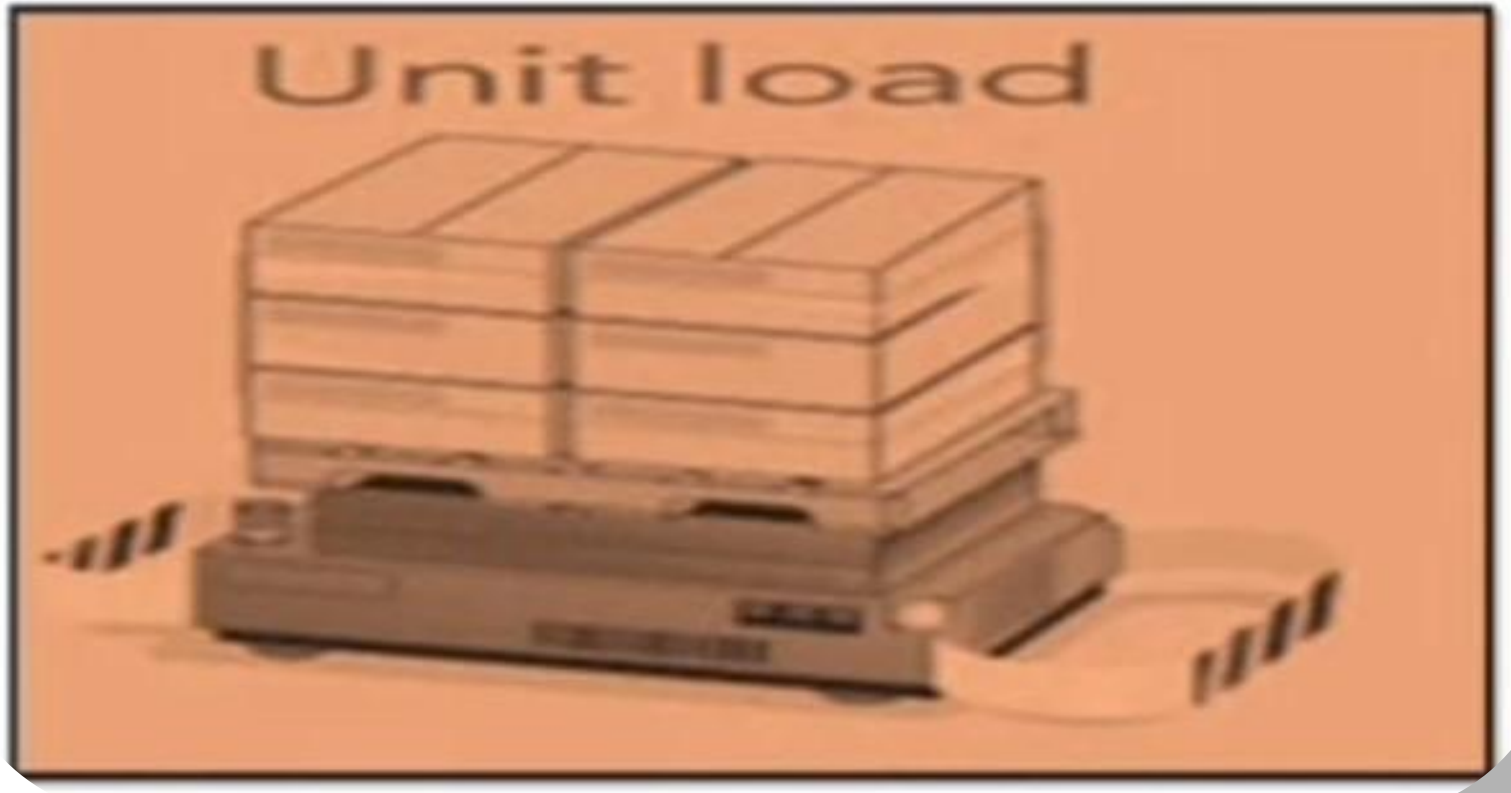
DRIVERLESS TRAIN



PALLET TRUCKS



UNIT LOAD CARRIERS



We can categorize AGVs into three main types:

- Unit Load AGV (delivering goods)
- Forklift AGV (warehouse)
- Towing AGV (pulling loads of goods)

Unit Load AGV

- Unit Load Carriers (Top Carriers)
  - Move unit loads from one station to another
  - Equipped for automatic loading and unloading pallets or tote pans with power rollers, belts, lift platforms

Forklift AGV

Towing AGV

Automated Guided Vehicle (AGV)

- Where AGVs are used:
  - Automotive industry
  - Commercial print
  - Hospitals
  - Chemical industry
  - Food handling
  - Manufacturing
  - Paper industry

Where are AGVs used?

These types of AGVs can be used to move different goods in different phases of production:

- Assembly Lines.

@ You can use Towing AGVs to transfer **raw materials** from material shelves to workstations on the assembly lines. For example, these vehicles can drag big trucks of components for cars, including steel, aluminum, engine, battery, brakes, fuel tanks, and more.

- **Packaging Lines.**

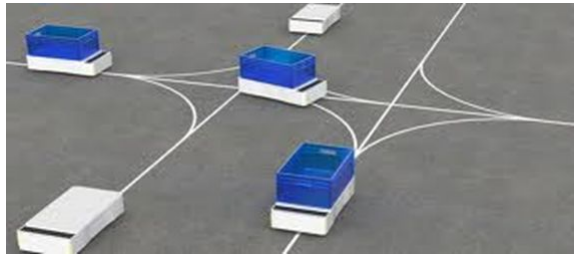
@ You can use Foklift AGVs to lift **semi-finished goods** like televisions and laundry machines and move them from assembly lines to packaging lines. These work-in-process products will then be packaged for shipping.

- **Logics Warehouses.** https://youtu.be/ucbO7YUEUjc?si=urt499PJzPw1tH-s

@ You can use Unit Load AGVs to deliver **finished products** — like foods and beverages wrapped in boxes — between the packaging lines and logic warehouses or dispatch areas.

Applications:

- Work in process movement
- Finish product handling
- Raw material handing
- Pallet movement
- Tool and supply delivery
- Loading and Unloading



https://youtu.be/WIlS3vNSuQ4?si=wLzuXAylOCG6wcYI

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Frog AGV Systems

TRANSBOTICS
MOVING YOUR BUSINESS

savant automation

Class Application: Cost Estimate

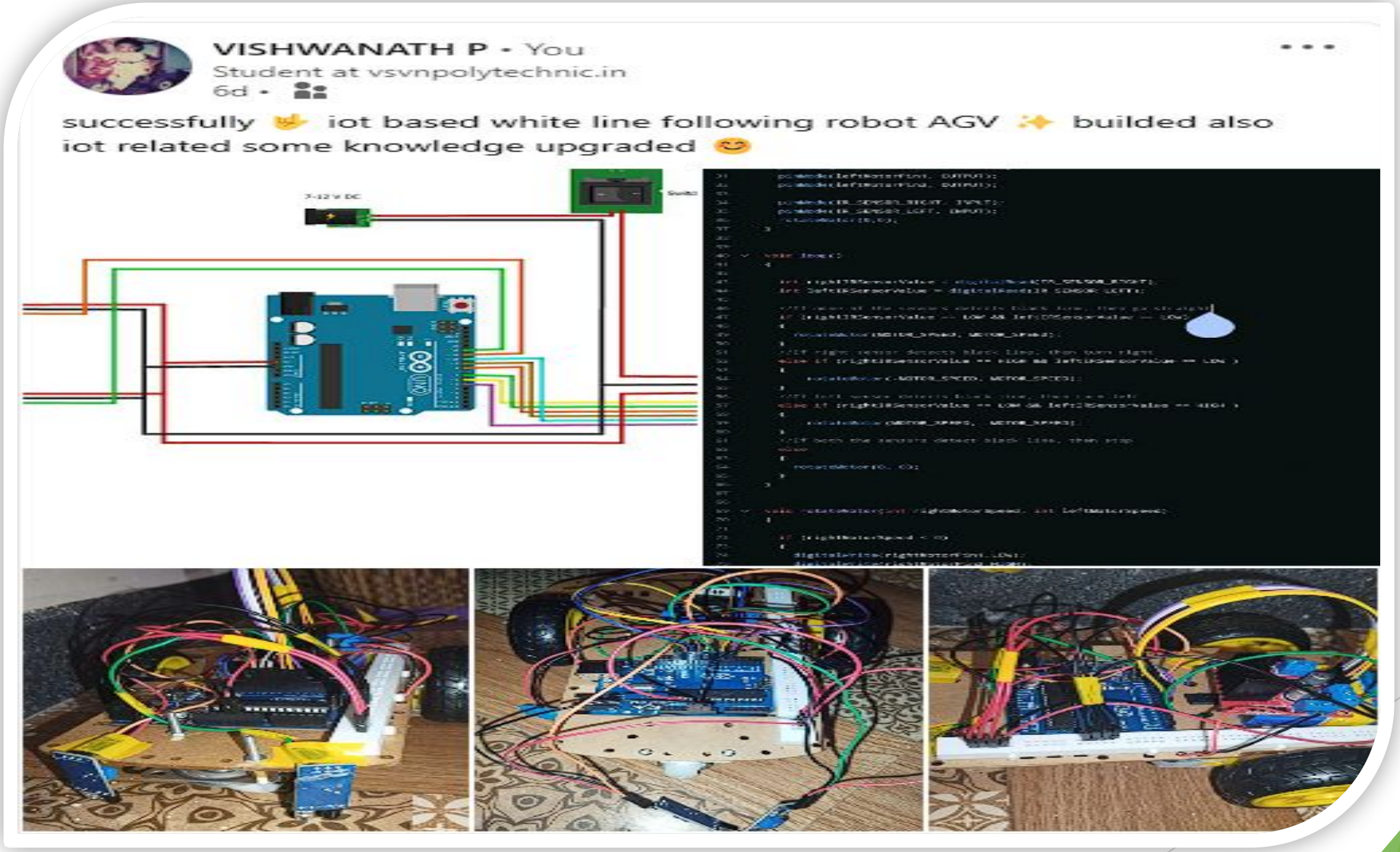
Requirements:

- 4 vehicles
  - Automatic Vehicle Dispatch, Load/Unload, Central Controller, Product Tracking, Multiple Path Options, Load capacity of 6,000 lbs (level 2)

Answer: Total system cost can be estimated by multiplying the projected number of vehicles times the unit costs shown

Estimated cost = 4*($115,000 to $225,000) = Range of ($460,000 to $900,000) depending on complexity of system….

BASIC MODEL LINE FOLLOWING ROBOT



ANY QUESTIONS

Thank you!