**Ideation assignment**

Runestone 2020

# Team members

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# Interpretation of the problem domain

1. Kind of warehouse system the customer currently operate:
2. Constraints:
   1. ability of the system to meet storage requirements in terms of light and temperature, as well as user preferences received through the GUI.​
   2. robustness and ease of installation of the final system should be addressed during development.​
3. Problems the customer wants to address with the new robotic system:

#### minimum error rates made by human

#### adaptable Workforce (Robotics allow warehouses to meet increased capacity demands quickly)

* 1. improve safety for workers

1. Important metrics: light, temperature, humidity

# Overview of the solution domain

Our robotic system:

1. Robot operates autonomously, and in collaboration with other robots, to place and retrieve goods in a storage area.
2. Sensors network to detect light levels, temperature, humidity, etc
3. Server that communicate with robots and sensors network, provide GUI for remote control client to get video and give command to the robots.

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# Details of the solution domain

Physical limitations:

Sensors :

1. Camera
2. LiDAR sensors that transmit a series of laser pulses to measure the distance from the robot to other objects in the environment
3. heat sensor

Kind of actuator we plan to use:

1. AGVs (Automated Guided Vehicle )

Requirements for:

1. Navigation:
2. Collaboration between robots:
3. Control:

Communication protocols to use between entities in the system:

1. Communication over WIFI using TCP/UDP
2. Real-time video: RTP, RTCP,RTSP

Kind of information needs to be communicated:

1. Coordinate of robots.
2. Video from robots
3. Humidity, temperature of warehouse.
4. Commands from remote client