Assignment 1-UML Modeling of an Automated Guided Vehicle System

CPE 684 Adv. Real-Time Systems

The following requirements are for an Automated Guided Vehicle (AGV) system. The AGV system will interact with a Supervisory System and a Display System. The computer-based AGV can move along a track in a factory in clockwise direction, and start and stop at factory stations. The AVG have the following characteristics:

1. A motor, which is commanded to Start Moving and Stop Moving. The motor sends Started and Stopped responses.
2. An arrival sensor to detect when the AGV has arrived at a station, e.g., arrived at station *x*. If this is the destination station, the AGV should stop. If it is not the destination station, the AGV should continue moving past the station.
3. A robot arm for loading and unloading a part onto and off of the AGV.

The AGV system receives Move commands from an external Supervisory System. It sends vehicle Acknowledgements (Acks) to the Supervisory System indicating that is has started moving, passed a station, or stopped at a station. The AGV system also sends vehicle status to an external Display System every 30 seconds. It is given that the arrival sensor is an event-driven input device and that the motor and arm are passive I/O devices. It is also given that the AGV system communicates with the Supervisory System and Display System by means of messages.

You are asked to analyze the requirements conduct OOAD and draw the UML diagrams needed. Submit a report on the requirements, analysis, and design models based on documented Use Case diagram, system sequence diagrams for each use case, a domain model class diagram, a State Chart for the AGV Controller class, and OOD containing package/class diagram and design sequence diagrams. Submit the report in word document containing all UML diagrams and their textual description.

Useful link
http://www.agvsystems.com/

http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=23A62CF36067DEB965552A69CF4A3617?doi=10.1.1.90.8915&rep=rep1&type=pdf