Navigation System

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# Introduction

Group project we got is to model and build an AGV which should be able to lift the lab equipment and transport it to a defined position. To do so navigation is one of the most important aspect. It should be able to find the lab, lift it and deliver the lab without any problems. Navigation system is one of the key parts for the project to be successful.

Out of different navigation systems, group agreed on navigation with Magnetic Tape Guidance with Dead-Reckoning. It is a reliable and budget friendly system. The whole idea is to lay down a magnetic tape on the floor on the path where the AGV is supposed to go and it will use Dead-Reckoning to know how far away it is from the destination or when to turn. Magnetic tape was chosen over the optical guidance. Optical Guidance was dropped because of the maintenance, as the paint could get scratched off easily and even the dust can cause sensor to not sense the path. Magnetic Tape Guidance is an easy to lay and low maintenance system. It is easy to change the path if needed to. Further, the tape laid on the floor can be epoxy coated for protection.

# Magnetic Tape Guidance

* The path is marked with a magnetic tape that is placed on the floor surface.
* A path sensor mounted on the AGV senses the magnetic field and follows the path marked by the tape.
* The path needs to be continuous.
* The path is fixed but, can be changed easily and quickly

The main components include a magnetic tape, a magnetic sensor mounted on the AGV which will sense the magnetic field and follow the path.

As far the costing is considered a decent magnetic sensor can be bought ranging from $300 - $600 and the magnetic tape which can bought ranging from $10 - $30 per meter. The distance which needs to be travelled is not much.

## References

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