DEPARTMENT OF MECHANICAL ENGINEERING
National Institute of Technology Calicut
ME4098D - B. Tech Project

ME4098D Project Interim Report

Title of the project work:

Robot based automation for vertical farming

Major objectives of the project:

1. Development of vertical farming environment which includes a Multi-stacked table for planting, growing crops and a Lift.
2. Development of Autonomous 4 Degrees of freedom Manipulator integrated with a mobile base to perform activities like planting, inspection, harvesting etc.

Work done till mid-semester evaluation:

1. Developed conceptual designs of Lift and Manipulator
2. Developed virtual environment for simulation
3. Developing novel designs for end effectors
4. Developed a deep leaning model for few vegetable detections.

Work to be completed during the remaining semester:

1. Analysing the developed CAD models.
2. Finalizing the optimal model for Manipulator and End effectors for different purposes.
3. Simulation of the Manipulator in the virtual environment to perform required tasks.

Major references:

1. Lepp.M.T., Pedastsaar.P.E., 2016. System for indoor plant application. US2016/0316646 A1.
2. Loo.C.E., Zhang.T., Yau.C., 2018. Domestic Autonomous Vertical farm that is moveable in stackable units. WO 2018/131016 A2.
3. Marchant.W., Tosunoglu.S., 2017. Robotic Implementation to Automate a Vertical Farm System. 30st Florida Conference on Recent Advances in Robotics May 11-12, 2107, Florida Atlantic University, Boca Raton, Florida

Details of the members of the project group:

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