

Agricultural Pesticide Spraying Robot using Bluetooth Module

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Abstract: *The agriculture industry is one that is highly resource- and labour-intensive. As such, farmers are increasingly turning to technology and automation to address this issue. However, agricultural robots are far too complicated, slow, and costly to be made publicly available. As a result, the agriculture sector still lags behind in integrating modern technologies. This research paper details the development of a low-cost agricultural robot for spraying fertilizers and pesticides in agriculture fields as well as for general crop monitoring. The prototype system is a two-wheeled robot that consists of a mobile base, a spraying mechanism, a wireless controller for controlling the robot movement, and a camera for crop health and growth monitoring as well as detecting the presence of pests in the agriculture field. Tests conducted on the prototype system show that while the productivity of the robot in terms of crop coverage is slightly lower than a human worker, the labour cost savings afforded by the agricultural robot prototype is much greater as it functions completely in an autonomous mode and only requires the operator to control the robot when placing it at the start of the crop path. Furthermore, the prototype system also provides greater resource savings and reduction in the contamination of underground water sources due to leeching process, thus achieving precision agriculture goals. Lastly, the excellent battery life of the prototype system ensures that there will be no increase in the operation times and reduction in the efficiency of the fertilizer and pesticide spraying process due to the recharging times when replacing human workers. Future recommendations include making the agricultural robot fully autonomous, using either a rail- or line-following system, to further reduce the labour requirements and costs*

Keywords: Pesticides, Adjustable robotics, Bluetooth

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