

Algorithm for Path Recognition in-between Tree Rows for Agricultural Wheeled-Mobile Robots

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Abstract : Machine vision has been widely used in recent years in agriculture, as a tool to promote the automation of processes and increase the levels of productivity. The aim of this work is the development of a path recognition algorithm based on image processing to guide a terrestrial robot in-between tree rows. The proposed algorithm was developed using the software MATLAB, and it uses several image processing operations, such as threshold detection, morphological erosion, histogram equalization and the Hough transform, to find edge lines along tree rows on an image and to create a path to be followed by a mobile robot. To develop the algorithm, a set of images of different types of orchards was used, which made possible the construction of a method capable of identifying paths between trees of different heights and aspects. The algorithm was evaluated using several images with different characteristics of quality and the results showed that the proposed method can successfully detect a path in different types of environments.

Keywords : agricultural mobile robot, image processing, path recognition, hough transform

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