

DEVELOPMENT OF HEVEA BRASILIENSIS SEEDER

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In rubber seed planting, nursery process is a crucial stage for the growth of the rubber tree. The seeds need to be put properly by ensuring it is planted as the dorsal surface on the top and the ventral surface at the bottom. By putting the seed in a proper way and a suitable germination condition, the seed will have a higher rate of germination. Anyway, this is very time-consuming and has to be done by the workers manually. Mistakes by the workers can happen all the time and this will affect the rate of germination of the seeds. In this research, an automatic robotic arm with camera vision for rubber seed planting is developed. Nowadays, the robotic arm has been widely used in the industries. The robotic arm is equipped with a camera to give 'vision' to the robot. The image captured from the camera is used to identify the position of the object. This facilitates the autonomous movement of the robotic arm towards an object without the need of a human operator. Hevea Brasiliensis Seeder integrates with a camera to acquire the image of the seed. The image is then being processed by using MATLAB to identify the surface of the seed. The robotic arm then performs seed planting operation based on the result of the image processing. In the experiment, the image processing successfully determines the surface of the rubber seed and send the result to the robotic arm. The experiment is done by using 40 samples of rubber seeds. The image processing technique is able to achieve 90% accuracy under indoor light condition. The robotic arm successfully grasps the rubber seeds and place it on the initially fixed place. The total time taken to complete the whole operation is 10 seconds.

Keywords: dorsal, ventral, Hevea Brasiliensis Seeder, MATLAB, autonomous movement