

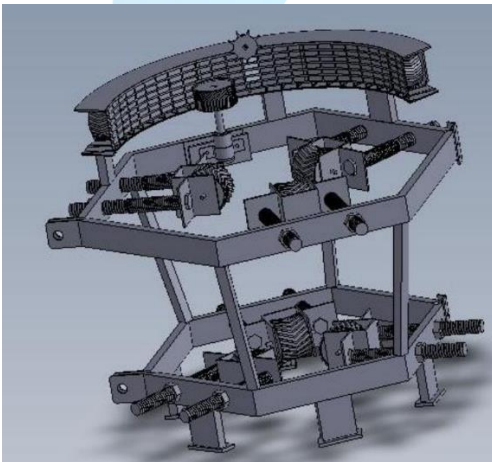
Areca Nut Tree Climbing and Harvesting robot

"The internet is becoming the town square for global village of tomorrow"

AGRIBOTS

Today's agriculture uses technologies such as robots, sensors, temperature etc. Farm automation devices allows agricultural business to be more profitable, efficient, safer, and more environmentally friendly. There is a need for mechanization in the order to minimize the manpower. This mechanized semi automotive robot, would eliminate the high risk of manual climbing for harvesting areca nut.

Agriculture is the primary source of livelihood for about 58% of the Indian population. Kerala is the second largest state in producing areca nut. Areca nut is erect unbranched palm with the approximate height of 10-30m, depending upon the environmental conditions. Majority of the areca nut is harvested by climbing the tree and cutting down the nuts by hand. Due to the height and lack of branches leads to high risk and difficulties in climbing. The scarcity of climbers results in disruption of harvesting cycles leading to losses for growers. These problems can be solved safely and easily by implementing technology. This robot helps the user to harvest areca nut palm easily, safely, and useful for those having plantation. This kind of devices encourage the more people to come forward to agriculture. This robot is tested successfully by Indian robotic agriculture machine PVT. LTD. And certified there by.



METHODOLOGY

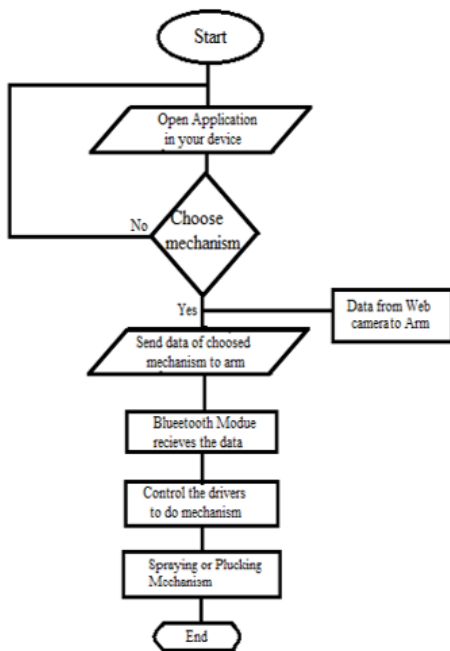
The robotic system consists of hexagonal frame, U clamp and motors, c frame, web camera, HC05 Bluetooth modules, ARM based Microcontrollers (MCU). It consists of two mechanisms, climbing mechanism and cutting mechanism. In climbing mechanism, the hexagonal frame forms the base of the climbing mechanism. It can be opened and closed with the help of hinge. Tyres are fixed on to the U clamp and are powered by DC motors. Harvesting mechanism consists of rotating blade capable of movement in an arc. A semi-circular shaped frame is attached on the top of the hexagonal frame. Tyres are fixed to semi-circular frame to free rotation. The hexagonal frame is opened and then attached to the tree using locking nut. The robot moves up using tyres powered by dc motors. Once the robot moves top, the bunch of nuts is located by the web camera which is attached to the robot. After clear view of nuts obtained from camera, the data is sent to ARM microcontroller, the cutting mechanism starts. Bluetooth module receives the data and c-frame moves in an arc, cutting

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down the areca nut bunch from side on point where it attached to the tree.



CONCLUSION

Agriculture in India is livelihood for majority of the Indian population and never be underestimated. Technology advanced device can help agricultural business to be more profitable, efficient, and safer. So, this robot is considered as the well potential device to harvest areca nut with less power consuming and can be easily operated by anyone.