

Abstract

A rotary bionic woodpecker transplanting robot. The device can be achieved for different types of rice seedling in aperture disk for lossless and efficient clamping. Applicable to the agricultural field plug seedlings, industrial non-destructive gripping, stripping and other fields.

Methods

As we all know, when woodpecker eating ,it can complete the whole action speedly and stably . It provides a way to solve the problem of high-speed non-destructive grabbing of manipulators. We decided to study a robot suitable for high-speed transplanting based on the woodpecker feeding path.



Fig1. The process of tortoise flipping

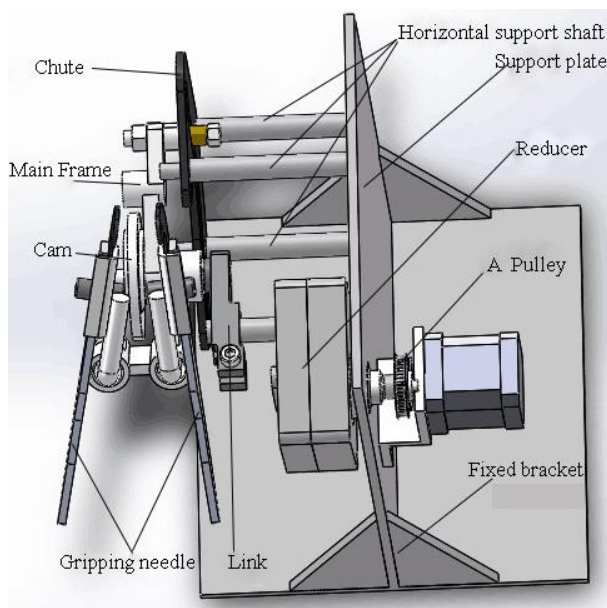


Fig2. Robot 3d model

Results

The transplanting robot part mainly comprises a fixation apparatus , the bracket is equipped with a horizontal support axis on the left side , and the horizontal support axis is fixed with a chute. The bracket is fixed on the right side of the bracket in close contact with the support plate. The other end of the reducer is connected with the pulley ,on the other side of the support plate is connected with the drive Linkage. The drive link is connected with the cam in the middle of the main frame. The main frame of the manipulator is arranged toward the front of the plug, And the lower part of the needle is the clamping part. Under the drive of the pulley, the reducer drives the rotation of the connecting rod. The rotation of the connecting rod drives the rotation of the cam and the main frame, the movement of the cam and the main frame's reciprocating motion in the chute is driven by the reciprocating motion of the gripping needle in the chute, which achieves the purpose of high speed transplanting.



Fig5. Physical map

Results

Movement process: through the driver to drive the stepper motor to make the Linkage move, so as to drive the the Picking up needle connect to the main frame for the seedling pick and throw movement.



Fig3. Take the movement map

Fig4. Miao movement map

Publications/patents or Rewards

Patents :

