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## Patent Search

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### Abstract:

The application discloses autonomous weeder, this smart weeder include multisensory information acquisition module which collect information from various sense ultrasonic sensors, Infrared sensors placed on machine and process their information to make action, Central processing unit which is GPU enabled processing hardy named as nvidia jetsonnano which performs weed detection task using instance segmentation method, Robotic arm which wear out weeds from ground and a suction sucks the weed from robotic arm and drop it into cutting arrangement, Weeder grass cutting blade drive arrangement which cut the weed and destroy them, Weeder wheel drive device which manages movement of machine, hydraulic suspensions and excels that increase and decrease height of machine according to the type of weed communicate with processing unit to provide information about position of robot, and sensors also detect several barriers on the path of robot during the robot movement field. In order to detect and recognize the plants in real time through camera, "Mask RCNN" algorithm is used by smart weeder. To remove the weeds, robotic arm extract weed from root itself. Its dependency on solar power makes the robot completely autonomous in terms of energy. Cranesbill weed dataset has used to test and train and this dataset is divided into 60 and 40 ratio for training and testing respectively (60% is used for training and 40% is used for testing purpose). During the testing process detects weed with accuracy of 98.2% which proves its efficiency in the field of weed. Despite of this, the proposed model is trained on different kind of weed, the accuracy proposed model remains similar.

## Complete Specification

### Claims:We claim:

1. A smart weeder (figure 1, figure 2,figure 3) which is autonomously detect the weed by using one or more cameras (610),GPU enabled CPU (504) and remove ou weed from ground by using (609).
2. Smart weeder(figure 1, figure 2, figure 3) is completely free from herbicides it uses (610) to wear out weed from ground, uses (608) to suck the weed from (610) drop in into (607) which chopped the weed using one or more blades control by one or more motors.
3. As smart weeder (figure 1, figure 2, figure 3) claimed in claim 2, where smart weeder (figure 1, figure 2, figure 3) uses one or blades to destroy the weed, it help avoid soil degradation due herbicides and improve soil fertility which ultimately lead to enhance in production.
4. As smart weeder (figure 1, figure 2, figure 3) claimed in claim 1, wherein it uses one or more cameras (610) to capture real-time images of weed, these images build dataset of images of real world weed images of various regions that further used for studies related to weeds. And also helps to classify weed as useable or n useable.
5. A Smart weeder (figure 1, figure 2, figure 3) uses (502) that captures images of smart weeder's (figure 1, figure 2, figure 3) surrounding which is processed by (5) detect objects in the captured images and (506) that uses ultrasonic and infrared waves to detect presence of any object in the surrounding of smart weeder (figure 2, figure 3) they both combind help to detect suspicious objects such as cattle's in the crop field that helps to avoid damage of crops from their action.
6. As a Smart weeder (figure 1 figure 2 figure 3) claimed in claim 1 it uses (610) (504) (609) for autonomously detection and removal of weed it completely elimi

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