

CLAIMS

What is claimed is:

1. An IoT based apparatus for inspecting quality of food produce, comprising:

a frame having an enclosure

a movable plastic tray disposed at a middle portion of the enclosure,
configured to receive a food produce to be inspected;

one or more camera comprising a first camera and a second camera
installed within the enclosure;

one or more light source comprises a first light source and a second light
source strategically mounted within the enclosure to avoid reflection and
hot spots,

at least one storage unit for storing the image of food produce from the one
or more camera;

a touch screen display for displaying the food produce placed in the tray;

a single board computer coupled to the camera, the first light source, the
second light source, the touch screen display, a wireless network,
configured to,

light the first light source to emit light and capture image of an
upper region of the food produce placed in the tray;

light the second light source to emit light and capture image of a
lower region of the food produce placed in the tray;

store the at least two captured images in the storage unit and
analyze the at least two captured images to obtain defect value of
the food produce, using a deep learning model; and

display the defect value and the food produce image along with
defects labelled on the image.

2. The apparatus of claim 1, wherein the first camera installed at an upper portion of the enclosure and the second camera installed at a lower portion of the enclosure.
3. The apparatus of claim 1, wherein the first light source disposed at the top portion of the enclosure and the second light source disposed at the bottom portion of the enclosure.
4. The apparatus of claim 1, wherein each light source is secured within the enclosure via a movable camera mount.
5. The apparatus of claim 4, wherein the movable camera mount is configured to move between an up and down position to focus the food produce placed in the tray.
6. The apparatus of claim 1, further comprises four or more wheels beneath the frame of the enclosure to facilitate movement of the apparatus.
7. The apparatus of claim 1, wherein the single board computer is configured to drive the one or more light source and one or more camera in sequence to capture the two least two images of the food produce.
8. The apparatus of claim 1, wherein the first and second light source is configured to emit warm white color with temperature of 3000K-3500K to preserve the natural color food produce.

9. The apparatus of claim 1, wherein the single board computer is configured to superimpose the captured image of the upper region of the food produce to the captured image of the lower region of the food produce to obtain a 360-degree coverage of the food produce.
10. The apparatus of claim 1, wherein the plastic tray is a transparent plastic tray and allows high percentage of light transmission.
11. The apparatus of claim 1, wherein the first light source and the second light source is a LED strip.
12. The apparatus of claim 1, wherein the first light source and the second light source are mounted at an angle of 45 degree to a plane of the plastic tray for brighter illumination.
13. The apparatus of claim 1, wherein the first light source and the second light source are covered by a diffuser.
14. An IoT based apparatus for inspecting quality of food produce, comprising:
 - a frame having an enclosure
 - a movable plastic tray disposed at a middle portion of the enclosure, configured to receive a food produce to be inspected;
 - one or more camera comprising a first camera and a second camera installed within the enclosure,
 - wherein the first camera installed at an upper portion of the enclosure and the second camera installed at a lower portion of the enclosure;
 - one or more light source comprises a first light source and a second light source strategically mounted within the enclosure to avoid reflection and hot spots,

wherein the first light source disposed at the top portion of the enclosure and the second light source disposed at the bottom portion of the enclosure;

at least one storage unit for storing the image of food produce from the one or more camera;

a touch screen display for displaying the food produce placed in the tray;

a single board computer coupled to the camera, the first light source, the second light source, the touch screen display, a wireless network, configured to,

light the first light source to emit light and capture image of an upper region of the food produce placed in the tray;

light the second light source to emit light and capture image of a lower region of the food produce placed in the tray;

store the captured image in the storage unit and analyze the at least two captured images to obtain defect value of the food produce, using a deep learning model; and

display the defect value and the food produce image along with defects labelled on the image.

15. The apparatus according to claim 14, further comprises four or more wheels beneath the frame of the enclosure to facilitate movement of the apparatus.

16. The apparatus of claim 14, wherein each light source is secured within the enclosure via a movable camera mount.

17. The apparatus of claim 16, wherein the movable camera mount is configured to move between an up and down position to focus the food produce placed in the tray.
18. The apparatus of claim 14, wherein the first light source and the second light source are mounted at an angle of 45 degree to a plane of the plastic tray for brighter illumination.
19. The apparatus of claim 14, wherein the single board computer is configured to superimpose the captured image of the upper region of the food produce to the captured image of the lower region of the food produce to obtain a 360-degree coverage of the food produce.
20. The apparatus of claim 14, wherein the first and second light source is configured to emit warm white color with temperature of 3000K-3500K to preserve the natural color food produce.