

Abstract

The aim of the thesis project is to develop an automated vegetable fruit sorting system with elements of artificial intelligence.

In the thesis project, we developed a system for automated sorting of vegetable crop (SASVC), in particular cucumbers. The developed SASVC is an alternative to well-known foreign analogues. It allows sorting vegetable fruits, in particular cucumbers, with high accuracy, quality, and productivity in an automated mode.

The thesis project analyzes modern methods and means of sorting, including mechanical, optical, and intelligent methods. A general structural diagram of the automated sorting system was developed, as well as functional and electropneumatic schematic diagrams of the system.

An electrical circuit diagram for the control of the induction motor and the fruit pushers was also developed. The final section is devoted to the substantiation of the architecture of an artificial neural network for recognizing fruit quality indicators and the development of its structural diagram.

Keywords: automated sorting, artificial neural networks, flexibility, automation, high-precision sensors, servo drive, piston.