



METADATA

Title: Agricultural Robots and Unmanned Aerial Vehicles

Other Titles: -

Language: Greek

Authors: Gravalos, I., Professor, UTH, Makris, A., Laboratory and Teaching Staff, UTH

ISBN: 978-618-228-087-4

Subject: NATURAL SCIENCES AND AGRICULTURAL SCIENCES

Keywords: Mechatronics / Robotics / Autonomous vehicles / Drones / Sensors

Bibliographic Reference: Gravalos, I., & Makris, A. (2024). Agricultural Robots and Unmanned Aerial Vehicles [Undergraduate textbook]. Kallipos, Open Academic Editions. <http://dx.doi.org/10.57713/kallipos-320>

Abstract

While agricultural production systems have evolved rapidly over the past century to feed the ever-growing world population, this has led to several significant economic and environmental impacts. As a result, modern agriculture has had to find new ways of using available IT and smart machine technologies to reduce and selectively target inputs more efficiently than in the past. Agricultural robots are autonomous machines programmed to perform discrete tasks automatically and intelligently. This book consists of a total of eight chapters. The first three chapters present fundamental concepts and principles of robotic manipulators and mobile robots. The next four chapters deal exclusively with agricultural robots. In particular, agricultural robots are presented which are used to carry out farming operations such as seeding, planting and transplanting, and robots designed for effective weed control. Self-propelled platforms and harvesting manipulators used in fruit harvesting are described.

Robots used in modern livestock facilities that automate important tasks that are laborious, undesirable, or economically unviable, such as feed distribution robots, manure removal robots, milking robots, and robots that collect information about animal health and welfare are also presented. The eighth and final chapter deals with unmanned aerial vehicles or drones. Drones with rotating propellers and fixed wings are introduced and their main structural elements are described. Drones are a cutting-edge technology that we find in modern agriculture. Topographical, soil, climatic-meteorological and telescopic data are nowadays obtained with the help of drones. With the continuous technological development of both drones and sensors, we were able to do agriculture with high spatial and temporal precision a few years ago. In the coming years, new technologies will have to be developed so that the new generation of robots and drones can perform their new tasks even better.

