

# Survey on Low-Cost Off-the-Shelf Smart Farming Solutions

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<b>Prerequisites:</b>	Basic knowledge about Internet of Things (IoT)
<b>Level:</b>	This topic is appropriate for Master Students
<b>Language:</b>	German or English
<b>Supervisor</b>	Dr. Andreas Könsgen

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## INTRODUCTION

Smart farming is an approach to make farming more sustainable by monitoring environmental or plant growth parameters under- or overground, e.g. soil moisture, precipitation or the ripening status of the plants. In this way, the farmer gets information e.g. about the proper growth of the plants or how much irrigation or fertilization is required. In recent years, a considerable amount of research about smart farming devices has been performed, see the examples given below. The development of such equipment has meanwhile left the status of pure research, there are off-the-shelf solutions available on the market.

## PROJECT DESCRIPTION

The objective of this work is to make a survey about commercially available solutions for smart farming. This should include a classification according to different criteria, e.g. the application such as irrigation control, or the wireless communication technology being used. The focus should be on low-cost solutions which are suitable for farming in developing countries.

## WORK PACKAGES

- Find sources describing commercially available smart-farming solutions – these can be scientific reports discussing such solutions or web pages of vendors.
- Identify criteria according to which the solutions can be classified as discussed above.
- Summarize the identified solutions and classify them according to the criteria.
- Documentation and presentation of the work.

## CONTACT

If you are interested in this work, please contact us via mail: [projects@comnets.uni-bremen.de](mailto:projects@comnets.uni-bremen.de)

## LITERATURE

- A. D. Boursianis et al., “Internet of Things (IoT) and Agricultural Unmanned Aerial Vehicles (UAVs) in smart farming: A comprehensive review,” *Internet of Things*, p. 100187, Mar. 2020, doi: 10.1016/j.iot.2020.100187.

- E. Navarro, N. Costa, and A. Pereira, “A Systematic Review of IoT Solutions for Smart Farming,” *Sensors*, vol. 20, no. 15, Art. no. 15, Jan. 2020, doi: 10.3390/s20154231.
- N. Islam, M. M. Rashid, F. Pasandideh, B. Ray, S. Moore, and R. Kadel, “A Review of Applications and Communication Technologies for Internet of Things (IoT) and Unmanned Aerial Vehicle (UAV) Based Sustainable Smart Farming,” *Sustainability*, vol. 13, no. 4, Art. no. 4, Jan. 2021, doi: 10.3390/su13041821.