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农牧业信息化专题

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前沿资讯

1. Sensoterra and JoinData to provide soil moisture data（荷兰公司Sensoterra和JoinData可提供土壤水分数据）

简介：Dutch companies Sensoterra and JoinData announced a partnership to empower Dutch growers in making data-driven irrigation decisions for optimum land management and yield.

Soil moisture data has become more important to farming, as challenges with drier summers and soil health have increased over the past years. Sensoterra is already supporting growers across the Netherlands, tracking soil moisture levels for agricultural crops such as row-crops, orchards and soft-fruits, with horticultural land use for bulbs, flower, and tree care.

The Sensoterra soil moisture data integration into the JoinData platform, enables farmers with the information necessary to make smart informed decisions for land and irrigation optimisation.

Data sharing and industry level learning

Both companies believe that transformation of the agricultural industry can only be achieved if the industry shares and learns to improve as a whole system. To do this there needs to be an easy way for farmers to use their own data generated, but also share it for mutual learning. JointData is facilitating this with a their platform for data sharing and industry level learning.

Using data to drive improved irrigation decisions

Sensoterra aims to create a new benchmark, for more sustainably grown crops using data to drive improved irrigation decisions. By integrating shared data, the benefits of this type of data gathering prove the necessity and support the agricultural industry move towards more sustainable practices. Data sharing and integration will only be enabled with end-user approval.

1 centralised dashboard

“Future crop yield will depend heavily on the ability to integrate and action data from multiple sources into 1 centralised dashboard. Working with JoinData as an independent partner to manage and enable data flow speeds up the adoption of IoT sensor technology in agriculture, in order to optimise land use and improve yield,” says Bas van der Velden, Sales Director, Sensoterra.

来源：FUTURE FARMING

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http://agri.ckcest.cn/file1/M00/06/8D/CsgkOF1BTQeAVaqwAAVg8pMBuF0232.pdf

2. Smart farming market to grow to US$ 40 Bn by 2026（到2026年，智慧农业市场将增长到400亿美元）

简介：根据未来市场洞察（Future market Insights）的一项研究显示，智慧农业解决方案的市场规模将增至400亿美元，2016年秋季之前，全球智慧农业解决方案市场价值100亿美元，与2015年相比，其年同比增长率超过5%。

预计到2026年，该市场的估值将达到近400亿美元，在2016年至2026年的预测期间，复合年增长率（CAGR）将达到11.2%。据估计，全球智慧农业解决方案市场在预测期间的增量变化略高于250亿美元。到2026年，全球智慧农业解决方案市场的硬件细分市场预计将占据一半以上的份额，而可变速率技术细分市场的CAGR预计将达到13.4%。

北美市场价值近150亿美元

截至2016年秋季，北美智慧农业解决方案市场的总估值达到50亿美元。在给定的预测期内，北美市场的估值估计接近150亿美元，年复合增长率为9.8%。

在2016年至2026年的预测期内，拉丁美洲市场的年复合增长率预计为12.3%。除日本外，亚太地区的智慧农业解决方案市场预计将带来超过50亿美元的商业机会，年复合增长率为13.7%。

无人机技术

不同的中小型农业解决方案供应商专注于利用无人机和无人机技术开发精准农业解决方案。根据未来市场洞察，这些发展将在未来几年推动全球智慧农业解决方案市场的整体增长。

投资增长

根据未来市场洞察，对智慧农业解决方案的投资增长是另一个重要趋势。传感器技术制造商正投资于众多中小型智慧农业解决方案提供商，以增加其服务在全球市场的存在。研究人员表示：“在2016年至2026年的预测期内，全球智慧农业解决方案市场的整体发展将受到与全球智慧农业解决方案市场整体价值链中多个实体不断增长的伙伴关系的积极影响。”

来源：FUTURE FARMING

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http://agri.ckcest.cn/file1/M00/00/01/CsgkOV1BTuKAGufdAAaQsxA5n1M101.pdf

3. agROBOfood: Towards a European network and effective adoption of robotics technologies, CEMA partners in this new EU project advancing robotics technology for the agri-food sector(agROBOfood：面向欧洲网络和机器人技术的有效应用，CEMA在这个新的欧盟项目中合作推进农业食品领域的机器人技术)

简介：Starting June 2019, the 16 million EU project agROBOfood builds the European ecosystem for the effective adoption of robotics technologies in the European agri food sector. Janneke de Kramer, coordinator agROBOfood: ”Now the agROBOfood project has started, it is possible for companies throughout Europe to be supported in Agro Food Robotics innovation and business. Through the network of digital innovation hubs, borders can be crossed and European strengths combined. agROBOfood will demonstrate and accelerate new robotics technology to make the European agri food sector more efficient and competitive.”

The challenges faced by farmers are immense, knowing that they are asked to produce more and better food while using fewer resources, to lower their environmental footprint and to meet evolving consumer demands. agROBOfood aims at maximising the return of EU investment in agri food robotics and advance Europe to become the vanguard in providing

safe and adequate food in a sustainable way.

Innovation Experiments

The heart of the project is formed by Innovation Experiments, organized and monitored by Digital Innovation Hubs. In 7 Regional Clusters, initial experiments will demonstrate robotics innovations in agri food in a manner that ensures replicability and wide adoption across Europe.

Examples

To protect people from working in sub-zero temperatures, in the agROBOfood project a demonstrator robot will be built: a mixed palletiser to work in a freezer room. Another example will be to harvest fruit automatically, on time and with less manpower. This results in lower production and resource costs, whilst solving the labour shortage problem. Furthermore a demonstrator for cucumbers will be built which can judge the maturity and pick & handle fruits in a greenhouse. Also, we will show a drone monitoring vineyards. Many more examples will be shown, both by the consortium and by companies who can apply for funding in the open calls. The Digital Innovation Hubs and connected experts will support these innovation experiments.

Digital Innovation Hubs

agROBOfood connects the world of Robotics and Agriculture, R&D and business by establishing a sustainable network of Digital Innovation Hubs. This consolidates, extends and strengthens the current ecosystem. Digital Innovation Hubs support companies in digitization by connecting technical, human and financial stakeholders.

agROBOfood will work closely with the broader European robotics community, ensuring synergetic effects with initiatives such as EU-Robotics. This will maximize the return of European investments, including private capital, in the digital transformation of agri food.

Partners

The agROBOfood network already consists of 49 digital innovation hubs and 12 competence centers and will grow during the project. The project consortium fuelling this growth has 38 partners, led by Wageningen University & Research.

Open calls

An Industrial Advisory Board will provide strategic guidance and also define priorities for the selection of solutions to be funded. Open Calls will attract additional Innovation Experiments and Industrial Challenges. There is €8 million available to the benefit of SMEs.

Through its inclusive structure and ambitious targets, agROBOfood aims to bring the entire European ecosystem together; connecting the dots in a way that ensures effective adoption of robotics technologies in the European agri food sector. Please grow with us!

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会议论文

1. SMALL AGRIBOT FOR MONITORING ENVIRONMENTAL VARIABLES IN GREENHOUSE(用于监测温室环境变量的小型农业机器人)

简介：Our study presents the design, construction and validation of an agricultural robot for greenhouse monitoring. The complete system consists of a sensory system on board a small chassis (i.e., a four-motor small-UGV). The system was designed based on the Arduino Nano V3 development platform, a NDIR CO2 sensor, a SHT10 digital air temperature and humidity sensor and open source software. The sensors have been selected by considering the climate and plant growth models and the requirements for their integration onboard the mobile robot. The goals of this system include taking measures of CO2 concentration, air temperature and humidity and plotting maps of these variables. The tests have shown that the measurements made with the chosen sensor are suitable for obtaining local data for production monitoring, problem detection and local climate control. All components of the system have been developed, integrated and tested through a set of field experiments in a real greenhouse. The primary contributions of this paper are the validation of the agribot as a platform for autonomous agricultural monitoring duties.

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2. SMALL GREENHOUSE ROBOTIZED SOLUTIONS: STATE OF THE ART AND FUTURE PERSPECTIVES(小型温室自动化解决方案:当前发展现状和未来展望)

简介：Nowadays, precision agriculture means also, the application of high technologies, such as automation, robotics and computing in the agriculture and, particularly in this case, the greenhouse farming. This paper was focused on the state-of-the-art analysis of the main robotized solutions available regarding greenhouse environmental monitoring and control and greenhouse agricultural works. The analysis aims to transfer solutions from general agrobots and cobots to greenhouse farming (GF). Since, one of the biggest encountered problems is the use of low cost robots for small farms greenhouses, the paper try to select the criteria (costs, technical capability, reliability etc.), to find the optimum solutions. The practical reasons involve: cost-efficiency of robotics, use of robots in safe conditions or knowledge transfer problem from farmers to the computer. The most important conclusions after questionnaire on 20 specialists (10 in robotics and 10 in greenhouse farming) were: agricultural tasks could be: transplanting and seeding, plant protection and weed control, harvesting and packaging; supporting tasks must be: guidance and navigation, mapping and location, fruit selecting and grasping; robot structure must include: 4 wheel steering system

controlled by ultrasonic sensors, 2 controllers (ARDUINO OR RASPBERRY), binocular stereo vision, power supplying system and optional: 5 DoF harvesting system, 2 linear laser scanner. This work proposes a viable solution given by specialists, which could be implemented in the specified conditions of using the robots in greenhouses in the Romanian Banat area.

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3. ON THE CURRENT STATE OF AGRICULTURAL ROBOTICS IN CROP FARMING: CHANCES AND RISKS(浅谈农业机器人在农作物种植中的现状:机遇与风险)

简介：For decades, labour shortage in agriculture has been met by clout increase through heavy machinery, creating environmental problems. Latest automation technology offers additional opportunities for a more sustainable land use. Therefore, new information and communication technology can be merged into Cyber Physical Systems providing the basis for agricultural robotics. A widely discussed concept is swarm farming, where many small robots work and organize autonomously. The human operator is left with planning, surveillance and emergency management chores. This work examines the current state of agricultural robotics in the market and identifies chances and threats the technology poses to the work environment of farmers. Robots can improve the efficiency of crop farming and help mitigate negative environmental impacts of heavier farm machinery. Low-input robots offer special potential, as they can perform tasks that originally required the precision of human body work. A combined approach of small robots and middle-sized tractors, working together in swarm configuration will foster the scalability of the resulting system, but also requires more complex surveillance-, management-and data infrastructure systems. Robots in agriculture can mitigate physical loads and stress of monotonous work, but the required level of skill, education and always-alert-times will rise. On the other hand, these changes in technology will create new, well paid jobs for educated experts in rural areas.

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