中国工程科技知识中心
China Knowledge Centre for Engineering Sciences and Technology

《现代智慧生态农业发展战略研究》专题快报

2021年第8期（总第23期）

中国工程科技知识中心农业分中心

中国农业科学院农业信息研究所　　2021年4月19日

【动态资讯】

1．农业农村部谋划“十四五”农业机械化重点任务

【农业农村部】日前，农业农村部在京召开农业机械化工作会议，谋划“十四五”农业机械化重点任务，部署今年重点工作。农业农村部副部长张桃林出席会议并讲话。会议指出，农业机械化是建设现代农业的重要内容。各级农机化部门要紧紧围绕“保供固安全、振兴畅循环”工作定位，紧盯“保供、衔接、禁渔、建设、要害、改革”目标任务，科学谋划“十四五”重点任务，有力支撑现代农业发展和乡村全面振兴。 会议强调，要支撑保供，强化核心技术和关键装备研发，推动各产业各区域各环节努力实现机械化全覆盖，在确保粮食等重要农产品供给安全上提供支撑；要聚力衔接，加快丘陵山区、革命老区、边疆边远等地区机械化发展，在巩固拓展脱贫攻坚成果同乡村振兴有效衔接上用力；要助力建设，加快推进机械化、智能化，在现代设施农业、智慧农业和数字乡村建设上主动入位；要盯紧要害，推进机械化与品种选育、耕地质量提升、绿色低碳发展紧密融合；要关注禁渔，在满足长江流域退捕转产渔民对机械化技术及装备需求上精准对接；要融入改革，大力发展农机社会化服务，以机械化促进农业生产关系、经营模式创新，在实现小农户与现代农业有机衔接上担当作为。会议还就农机短板需求目录制定、机械化保障粮食稳产增产及机收减损、农机购置补贴和东北黑土地保护性耕作行动计划实施、农机安全生产等2021年重点工作作出部署。

链接:

http://agri.ckcest.cn/file1/M00/02/AF/Csgk0WB9c0WAFKVCAAPtkP4iEZQ209.pdf

2．伊利探索“利益联结”模式带动牧场发展

【中国农网】乳业横跨一二三产业，联接着我国14亿消费者与广大的农牧民群体，事关国民营养健康与农牧民致富。近年来，全国各省相继出台相关政策，推动奶业全产业链

优化、提质升级。2021年中央一号文件指出，要积极发展牛羊产业，继续实施奶业振兴行动。作为乳业的龙头企业，伊利积极响应“一号文件”精神，以奶业振兴为抓手，助力乡村振兴，大力探索奶业发展新模式、新路径。为赋能上游产业链发展，探索出“四个联结”精准帮扶模式，通过技术、金融、产业、风险四个联结，提升牧场规模与管理水平，加快向现代化、集约化、智能化牧场发展。

链接:

http://agri.ckcest.cn/file1/M00/02/AF/Csgk0WB9dBqAa_OtAA2VFYg5HOI056.pdf

【文献速递】

1．AMSR-E土壤水分产品评价及在干旱监测中的应用

文献源：干旱区研究,2021-04-14

摘要：土壤水分在地表能量交换和气候变化中有重要作用。干旱为常见的自然灾害，土壤水分是反映干旱最直观的指标，利用微波遥感监测地表土壤水分具有明显优势，微波土壤水分产品也在干旱监测中具有重要作用，但由于地表下垫面的差异和反演算法的精度，使土壤水分产品的应用受到了限制，因此，本研究对广泛使用的AMSR-E （Advanced Microwave Scanning Radiometer-Earth Observing System）土壤水分产品在中国范围内的精度及在干旱监测中的作用进行评价。结果表明：AMSR-E能较好的反映站点不同深度的土壤水分情况，大多数站点存在极显著相关关系，但20 cm相关性低于10 cm，且高相关系数区域明显缩小；下垫面为白地的农试站观测的土壤水分和AMSR-E土壤水分产品之间的相关性显著高于种植作物下的农田区这2种数据的相关性；对于大多数下垫面类型，站点土壤水分和AMSR-E土壤水分之间存在明显的正相关关系，且达到极显著相关，对10 cm土壤水分观测，相关性最好的是种植高粱下观测的土壤水分，相关性达到了0.579，对20 cm土壤水分观测，相关性最好的是棉花下观测的土壤水分，相关性达到0.528。春季、夏季和秋季的相关性较高，而冬季相关性略低；在种植作物的情况下，东北、华南和西北地区，站点和AMSR-E土壤水分观测相关性较好，仅考虑白地的情况下，西北、西南和华中区域，这两种数据的相关性更高些；AMSR-E较农试站土壤水分取值范围宽，但不同区域AMSR-E土壤水分取值峰值不同，华北区域2种土壤水分观测分布和波动较为一致；AMSR-E基本能反映北方干旱和南方多雨引起的土壤水分差异趋势；大多数站点和大多数作物类型下，10 cm站点土壤水分和AMSR-E土壤水分相关性较好的情况下，20 cm也会有这样的表现。其次，AMSR-E土壤水分产品提取的土壤水分距平百分率，和同期的降水距平百分率之间的相关性较好，尤其在西北地区和北方大部分区域更明显，AMSR-E土壤水分产品能较好的反映降水的波动，和干旱的发生状况。

链接:

http://agri.ckcest.cn/file1/M00/02/AE/Csgk0WB9XcWAPOVEABD1kbG8mYM025.pdf

2．集成建模变量优选和参数学习的SVR盐渍化监测

文献源：遥感技术与应用,2021-04-06

摘要：当前基于机器学习算法反演土壤盐分含量（Soil Salt Content,SSC）较少关注模型参数和建模变量的优选。基于Sentinel-1 SAR、Landsat 8 OLI、DEM数据提取8类共40个环境变量，经Pearson相关分析初步筛选出候选特征变量，分别带入格网搜索（Grid Search,GS）算法、遗传算法（Genetic Algorithm,GA）、粒子群算法（Particle Swarm Optimization,PSO）同步优选支持向量回归（Support Vector Regression,SVR）的模型参数和建模变量，然后建立盐渍化监测模型（GSSVR、GA-SVR、PSO-SVR），选择最优模型反演玛纳斯灌区生长季SSC分布。结果表明：提取的环境变量与SSC相关性较好，植被指数和特征空间对盐渍化更为敏感；与GS-SVR相比，GASVR和PSO-SVR减少了建模变量，提高了模型精度，适应度值分别提高了53.87%、69.96%；生长季内，春秋季积盐，夏季脱盐，SSC均值变化趋势：整个研究区、中部和南部为降低—增加；北部为增加—降低—增加；依据生长季SSC小提琴图表明整个研究区，中部和北部SSC数值区间变化趋势为扩张—收缩—扩张，南部为扩张—收缩—平稳。

链接:

http://agri.ckcest.cn/file1/M00/02/AE/Csgk0WB9XR2AJw40AB43aNx4unQ999.pdf

3．计算机视觉技术在智慧羊场中的研究进展

文献源：中国饲料,2021-04-05

摘要：智慧羊场具有科学化、标准化管理的优点,是羊场转型发展的趋势。计算机视觉技术是人工智能的核心,可以实现非接触性、自动化、实时监测羊的个体信息。本文总结并分析了计算机视觉在羊场的个体识别方法、行为识别方法、体尺与体重估测、疾病监测的研究现状,并指出计算机视觉在智慧羊场的进一步发展趋势。

链接:

http://agri.ckcest.cn/file1/M00/02/AE/Csgk0WB9XK6AKkcuABGKsvIM3g0825.pdf

4．Dynamic obstacle detection based on panoramic vision in the moving state of agricultural machineries

文献源：Computers and Electronics in Agriculture,2021-04-01

摘 要： he manner in which the obstacles around the automatic navigation agricultural machinery can be detected and identified is of great importance in improving the safety and operation efficiency of agricultural machineries. This study was based on a panoramic

camera to rapidly detect the dynamic obstacles around the moving agricultural machinery. It used the LucasKanade optical flow algorithm to detect the moving obstacles in a panoramic image. On the basis of the actual farmland operation, background optical flow dynamic model was established to filter the background optical flow. The noise optical flow was filtered by combining K-means clustering segmentation algorithm and the variances of optical flow direction and of optical flow length within clusters. On the basis of the segmentation clusters, we used an external rectangular box to select foreground moving object. The principal optical flow direction in the segmentation clusters, and the distance between clusters determined whether the same foreground moving object was selected. Subsequently, we placed the corresponding combination processing into use, which can make the box select the complete foreground motion target. By processing 100 frames of the images, result showed that the average time consumption of the proposed method was 0.801 s. The accuracy rate of detecting dynamic agricultural machinery was 88.06%, the accuracy rate of detecting pedestrians was 81.61%, and the overall accuracy rate was 82.93%. Thus, the proposed method could meet the requirements of actual farmland operations and have a good instantaneity and detection results.

链接:

http://agri.ckcest.cn/file1/M00/02/AF/Csgk0WB9fFiALEOpAZ_SL6UA71Y435.pdf

5．机器学习在苹果智慧生产中的应用

文献源：吉林农业大学学报,2021-03-29

摘要：苹果是我国重要的园艺作物，机器学习和计算机视觉融合促进了苹果检测与识别技术的发展，为苹果智慧生产提供了新的支撑。本文以苹果智慧生产中苹果果实识别、苹果品质和营养的无损检测、苹果品质分级技术作为重点，介绍了机器学习在苹果智慧生产领域中的应用进展。包括：基于支持向量机的苹果果实识别方法，基于深度学习的在树水果实时识别方法，光谱技术结合机器学习的苹果品质检测，电子鼻结合机器学习的苹果品质检测，以及机器学习在苹果分级中的应用。最后分析指出了机器学习在苹果智慧生产应用中的存在问题，展望了未来的发展方向。

链接:

http://agri.ckcest.cn/file1/M00/02/AE/Csgk0WB9ZEqAVWqOAApzoF0MdSY657.pdf

6．DeepWay: A Deep Learning waypoint estimator for global path generation

文献源：Computers and Electronics in Agriculture,2021-03-26

摘要：Agriculture 3.0 and 4.0 have gradually introduced service robotics and automation into several agricultural processes, mostly improving crops quality and seasonal yield. Row-based crops are the perfect settings to test and deploy smart machines capable of monitoring and manage the harvest. In this context, global path generation is essential either for ground or aerial vehicles, and it is the starting point for every type of mission plan. Nevertheless, little attention has been currently given to this problem by the research community and global path generation automation is still far to be solved. In order to generate a viable path for an autonomous machine, the presented research proposes a feature learning fully convolutional model capable of estimating waypoints given an occupancy grid map. In particular, we apply the proposed data-driven methodology to the specific case of row-based crops with the general objective to generate a global path able to cover the extension of the crop completely. Extensive experimentation with a custom made synthetic dataset and real satellite-derived images of different scenarios have proved the effectiveness of our methodology and demonstrated the feasibility of an end-to-end and completely autonomous global path planner.

链接:

http://agri.ckcest.cn/file1/M00/02/AF/Csgk0WB9eiyAOcOyAGpXEoR1-v8631.pdf

7．机器视觉技术在现代农业生产中的研究进展

文献源：中国农机化学报,2021-03-15

摘要：机器视觉技术已经广泛应用于农业生产的各个环节,详细阐述机器视觉的概念、组成部分、工作原理以及发展历程,总结国内外的研究成果,介绍机器视觉技术在作物病虫草害识别与监测、作物生长信息监测与产量估计、果蔬识别定位与采摘、种子产前检测与果蔬分级以及农业机器人视觉导航等领域的研究进展与应用情况,提出农业场景视觉系统在稳定性、可靠性、准确性以及嵌入式视觉系统硬件计算能力与核心算法等方面还有待提高与突破,国内高水平学者集中的研究机构匮乏,行业创新能力不足,本土企业竞争力较弱等劣势;认为3D视觉技术、多传感器融合的视觉系统以及与5G深度融合的视觉系统将会成为未来农业生产领域的主要研究方向。此外,机器视觉技术的应用势必会带动产业升级、推动农业智能化发展,为无人农场建设提供有力的技术保障。

链接:

http://agri.ckcest.cn/file1/M00/02/AE/Csgk0WB9ZdeAT2rJAAvrgqTBnKQ544.pdf

8．基于双目立体视觉的植物三维重建系统

文献源：中国农机化学报,2021-03-15

摘要：为推进农林业科技发展,将虚拟现实的三维重建技术进一步应用于农林业领域将受到更加广泛的关注。本文通过拍摄两幅不同视角的拟南芥图片来获得二维图像信息转换为三维信息,重建出三维模型,并建立人机交互系统。选择双目立体视觉系统来进行拍摄不同视角的拟南芥图片,采用相机标定参数对获取的图像进行畸变校正和极线校正,同时对图像进行图像分割。然后选择SURF特征检测算法和SIFT特征匹配算法进行特征检测匹配,将匹配后得到的拟南芥的二维数据转换为空间三维坐标,使用三角剖分算法和纹理映射方法得到了拟南芥三维逼真模型。最终得到了具有592个空间点的拟南芥的三维模型,并建立了基于机器视觉技术的模式植物虚拟生长模型的人机交互系统。通过对多盆拟南芥进行建模和参数验证,拟南芥叶片长度、宽度和茎秆长度的软件测量值与真实值之间的相关系数R2分别为0.940 4,0.974,0.986 2,且软件测量值都在真实值的5%误差线范围以内。表明本文重建的拟南芥模型稳定性和可靠度都较高。

链接:

http://agri.ckcest.cn/file1/M00/02/AE/Csgk0WB9ZOSAd6DOACAkFwi6jkw565.pdf

9.

文献源：西北农业学报,2020-12-08

摘要：为了明确'绿迷一号'软枣猕猴桃采后贮藏特性及贮藏方式，先分别于（0±0.5）℃、（1±0.5）℃、（2±0.5）℃3个不同温度的冷库以及常温（2±1℃）贮藏，选出保持其生理品质较适宜的温度（1±0.5）℃；然后在（1±0.5）℃下结合3种不同厚度（0.01mm、0.03mm、0.05mm）的高压聚乙烯（Polyethelene,PE）袋包装，研究限气包装对该品种猕猴桃采后贮藏特性的影响。结果表明，不同厚度的PE袋包装能有效抑制果实原果胶和淀粉含量的降低，延缓硬度下降，推迟呼吸和乙烯高峰出现的时间，并降低峰值，从而延缓果实软化；显著降低果实的冷害指数、冷害率及褐变指数和褐变率，减轻果实冷害的发生。其中以0.03mm PE袋包装处理效果最好，形成的较适宜气体环境为O_2（11.07%～13.35%）+CO_2（2.33%～3.78%）。

链接:

http://agri.ckcest.cn/file1/M00/02/AE/Csgk0WB9Y-qAeApjAAkTfzA__Hs129.pdf

10．多功能苹果采摘包装机的设计与仿真

文献源：实验室研究与探索,2020-09-25

摘要：为减少苹果的表面损伤和降低采摘成本,提出一种集采摘和包装于一体力度可控的多功能采摘器,该采摘器主要由机械采摘头、手持伸缩杆、包装装置和控制系统组成。

对采摘器整体结构设计并对采摘头进行运动和受力分析;利用三维软件Solidworks建立苹果采摘器结构模型并对采摘头进行运动学仿真,得到采摘机械手的运动特性;运用ANSYS建立采摘头的有限元模型并进行力学分析,结果表明:该机构的结构设计合理,效率高,强度满足要求,为后期的硬质水果采摘器的设计提供了理论基础与实践依据。

链接:

http://agri.ckcest.cn/file1/M00/02/AE/Csgk0WB9YDeAL7CUABON6NmIsn4145.pdf

【会议论文】

1．Automatic Blossom Detection in Apple Trees using Deep Learning

发布源：IFAC-PapersOnLine

发布时间：2021-04-14

摘要：Overcropping in fruit trees results in decreased fruit size, poor fruit quality, biennial bearing, and reduction in productive life of orchards. Although flowers and fruits are removed/thinned naturally, they require additional thinning for commercial grade fruit production. Integration of machine vision system in mechanical/chemical thinning facilitates automated selective blossom thinning. The primary requirement for automating blossom thinning is to estimate the blossom density in apple trees under varying background and lighting conditions. In this work, we implement Mask-RCNN algorithm to perform instance segmentation of apple blossoms. Different image augmentation techniques were implemented and their impact on blossom detection were assessed. Experiments were conducted to achieve optimal values of hyperparameters of the deep learning network during the training. Implementation of image augmentation was crucial to reduce validation loss and improve detection accuracy of segmentation algorithm. The proposed system achieved average precision (AP) of 0.86 in detecting blossoms in test dataset previously unseen by the network.

链接:

http://agri.ckcest.cn/file1/M00/02/AF/Csgk0WB9ftOAcjS_ABhJC2cLF_o213.pdf

2．Block chain Technology in Agriculture Product Supply Chain

发布源：IEEE

发布时间：2021-04-12

摘 要： Globalized delivery of manufacturing and agricultural production offer renewed attention to the health, efficiency, and validation of many vital criteria in the food and

agricultural supply chain. That numbers of food safety and corruption hazards have generated an enormous need of an efficient traceability solutions which acts as an essential quality managements tools ensuring to enough product's safety within the agriculture supply chain. Block chain is the revolutionary technological method, which provides the groundbreaking result for commodity traceableness in agriculture and in food supply chains. Today's agricultural supplying chains are complicated ecosystems mixing several stakeholders making it difficult to validate several significant requirements mainly towards nation of first origin, crop growth phases, quality standards compliance, and yield monitoring. This paper proposes a strategy that levitates the block chain and conducts business operations effectively across the agricultural supply chain for tracking crop prices and traceability. The proposed framework solution discards the need for trusted centralized authority, intermediaries and offers records of the transactions, improving efficient science and safety with high integrity and reliability. All transactions are registered and then stored in block chain's unchangeable ledger with linkages to a decentralized le network, thereby ensuring vary high degree of traceability and transparency in the supply chain ecosystem in a stable, reliable and in efficient manner.

链接:

http://agri.ckcest.cn/file1/M00/02/AF/Csgk0WB9lNqAOjrJAAGEQM-RL90982.pdf

3．Large-term sensing system for agriculture utilizing UAV and wireless power transfer

发布源：IEEE

发布时间：2021-02-02

摘 要： In recent years, in order to improve crop production and quality of agricultural operations, an "agricultural remote monitoring system" have been attracting a lot of attention. The existing studies have proposed an agricultural remote monitoring systems using Wireless Sensor Network (WSN). In the existing system, the environmental information is collected from a large number of sensor nodes installed in the farm using a low-power wireless communications (e.g., ZigBee, LPWA). However, in these systems, even when the low-power wireless technology is utilized, it is difficult to run permanently on batteries because the battery capacity is not infinity. In addition, in the case of a large-scale field, a large number of intermediate nodes should be installed in the field, hence the installation and operation costs are high.On the other hand, a wireless power transfer technology is evolving and equipment which is capable of supplying power to places dozens

of centimeters away has been available. In addition, Unmanned Aerial Vehicles (UAV) that can fly stably for a long time and has a large loading capacity has appeared.Therefore, in this study, we propose and develop a wide-area sensing system for large-scale farms using a UAV, a wireless power transfer technology, and an energy-saving short-range wireless communication system (i.e., Bluetooth Low Energy (BLE)). The UAV flies autonomously to the location of sensor nodes that are widely installed in the large farm for collecting the sensor data. Here, the UAV is designed to supply the power to the sensor node to measure and send the environmental information using the wireless power transfer technology. It eliminates the need for periodic battery replacement of the sensor node, which reduces the cost of operating the system.Through the experimental evaluation using the developed system, it has been confirmed that the UAV can accurately be controlled by the proposed feedback control to land near the sensor nodes, and that the sensor nodes can be operated by the wireless power transfer from the embedded system of the UAV.

链接:

http://agri.ckcest.cn/file1/M00/02/AF/Csgk0WB9meSATHFXAAYiLQ40nlc842.pdf

【相关专利】

1．一种多功能智慧型植物生长监测室

发布源：国家知识产权局

发布时间：2021-04-26

摘要：本发明公开了一种多功能智慧型植物生长监测室,包括人工降雨单元、智慧灌溉单元、光监测单元、内部气流循环单元、智能曝气单元、远程智控单元。人工降雨单元可以设置雨强和降雨历时等参数；智慧灌溉单元可以实现灌溉时间和滴灌流量的智能化,并设置降水回收装置；光监测单元用于调节和检测植物生长所需光照强度和光照时间；内部气流循环单元主要用于控制室内温度、干湿度,并定时进行室内换气；智能曝气单元控制植物生长池的曝气速率和曝气时间；远程智控单元主要是在室外通过计算机触摸屏对其它单元发送指令,进行各项流程操作。

链接:

http://agri.ckcest.cn/file1/M00/02/AE/Csgk0WB9bXCAHJhbAAndN_-NgCE478.pdf

2．一种基于“藻鱼共生”的智能化生态体系

发布源：国家知识产权局

发布时间：2021-03-30

摘要：本实用新型涉及鱼类养殖与藻类养殖,尤其涉及一种基于“藻鱼共生”的智能化生态体系,包括养殖区、过滤区、监测系统及自动控制系统；所述养殖区包括养殖鱼苗的养殖区1和养殖小球藻的养殖区2,养殖区1内产生的废水经废液孔进入初滤区,初滤后的废水进入废水池,在循环水泵的作用下,废水池内的废水被泵入到养殖区2进行深度净化；监测系统可实时监测养殖区1内的水质情况和养殖区2内的小球藻生长情况,同时自动控制系统将根据监测系统的监测结果控制养殖区2内辅助光源与热源的开启和关闭,最终本实用新型可利用小球藻提供一种能有效净化鱼类生活水质,并在给鱼类提供饵料的同时实现小球藻自身的快速生长的一种基于“藻鱼共生”的智能化生态体系。

链接:

http://agri.ckcest.cn/file1/M00/02/AE/Csgk0WB9bCqAAtDNAAmIG_iXBLg570.pdf

3．基于RISC-V嵌入式处理器的除草机器人及控制方法

发布源：国家知识产权局

发布时间：2021-03-26

摘要：本发明公开了一种基于RISC-V嵌入式处理器的除草机器人,其特征在于,包括基于RISC-V指令集的K210嵌入式处理器、循迹单元和除草单元；其中,循迹单元包括预先铺设的循迹路径、灰度传感器、电机模块和履带组件；除草单元包括摄像头模块和机械臂模块；基于RISC-V指令集的K210嵌入式处理器与灰度传感器、电机模块、摄像头模块以及机械臂模块连接；电机模块与履带组件连接。本发明的基于RISC-V嵌入式处理器的除草机器人及控制方法,以基于RISC-V指令集的K210嵌入式处理器作为控制核心,并进行图像识别判别杂草,且其运行效率极高,既能节约成本,又能提高处理速度。

链接:

http://agri.ckcest.cn/file1/M00/02/AE/Csgk0WB9a2uAftY0AAeoIqIQC5k622.pdf

【专业会议】

1．加快数字乡村建设 服务乡村全面振兴 中国电信数字乡村全国推进启动会在长沙召开

发布源：中国农网

发布时间：2021-04-13

摘要：4月12日上午，中国电信在长沙举办数字乡村全国推进启动会。会上，中国电信全面介绍数字乡村解决方案，并重磅发布中国电信数字乡村云平台和《中国电信数字乡村白皮书》。中央网信办、农业农村部和国家乡村振兴局、湖南省政府及全国各省与数字乡村建设相关领导，华为、中兴、新希望等中国电信农业农村行业主要合作伙伴代表

共同出席了此次大会。 会议发布了《中国电信数字乡村白皮书》，系统总结了中国电信数字乡村建设实践，分享了中国电信数字乡村建设方案和典型案例，对中国电信各级企业高质量推进数字乡村建设具有重要的指导作用，对各地推进相关工作也具有重要的参考价值。同时，白皮书也向全社会表明了中国电信勇于担当数字中国、网络强国、乡村振兴的重任，和各级政府一起，全面推进数字乡村建设的坚定决心和意志。

链接:

http://agri.ckcest.cn/file1/M00/02/AF/Csgk0WB9dfWAXocDAEMngpqVUc0174.pdf

2．关于召开2021中国农业展望大会的通知

发布源：中国农业科学院

发布时间：2021-04-02

摘要：2021年是“十四五”开局之年，也是全面推进乡村振兴的开局之年，农业农村将进入新发展阶段。为展望未来农业发展趋势，加快现代农业发展，助力全面乡村振兴，兹定于2021年4月在北京召开“2021中国农业展望大会”。大会由农业农村部市场预警专家委员会支持，中国农业科学院农业信息研究所主办，农业农村部信息中心、农村经济研究中心、农业贸易促进中心、中国农学会等协办。 会议内容：（一）专题发布《中国农业展望报告》。发布《中国农业展望报告（2021-2030）》，分析市场形势，展望市场走势。（二）权威分析国内外农产品供需形势。针对水稻、小麦、玉米、大豆、棉花、油料、糖料、蔬菜、水果、肉类、禽蛋、奶制品、水产品、饲料等主要农产品进行国内外形势分析，开展特色农产品产业发展形势分析。（三）举行农业热点问题高层专家研讨。就乡村振兴、粮食安全、农业科技创新、农业资源环境、农产品国际贸易、农业大数据与监测预警等主题，举行高层专家研讨。

链接:

http://agri.ckcest.cn/file1/M00/02/AF/Csgk0WB9ch-AF3OTAAS8oZePjlo088.pdf

3．2021 2nd International Conference on Computer Vision, Image and Deep Learning

发布源：AEIC学术交流中心

发布时间：2021-04-01

摘要： 2021 2nd International Conference on Computer Vision, Image and Deep Learning (CVIDL 2021) will be held on June 18-20, 2021 in Xining, China. CVIDL 2021 is to bring together innovative academics and industrial experts in the field of computer vision, image and deep learning to a common forum. The primary goal of the conference is to promote research and developmental activities in computer vision, image and deep learning and

another goal is to promote scientific information interchange between researchers, developers, engineers, students, and practitioners working all around the world. The conference will be held every year to make it an ideal platform for people to share views and experiences in computer vision, image and deep learning and related areas.

链接:

http://agri.ckcest.cn/file1/M00/02/AF/Csgk0WB9klqAKlLNAA5j386nSMk915.pdf

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