2019年第24期总191期

农牧业信息化专题

本期导读

前沿资讯

1. 5G专利中国占比34% 发挥引领作用

2. 弗吉尼亚理工大学将建设未来农场

学术文献

1. 罗萨里奥数据集:用于农业环境定位和绘图的多传感器数据

2. 基于可达性分析的农田机器人多相侦察控制

3. 现场高通量葡萄表型与消费者级深度相机

相关专利

1. 利用受体和目标生物制品的响应的叉指微电极的生物传感器

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前沿资讯

1．5G专利中国占比34% 发挥引领作用

简介：据《日本经济新闻》报道，新一代通信标准“5G”的专利申请数量，中国占比达到34%，是现有4G标准的1.5倍以上。在4G标准中，欧美掌握了产品制造的标准必要专利（SEP），在作为新一代产业的基础设施5G中，中国的力量逐渐增强。

5G SEP中申请数量最多的企业是华为，占到15.05%。中国企业中，中兴通讯排名第5，中国电信科学技术研究院（CATT）排名第9。华为在基站设置相关专利等方面，远远超过竞争对手。中兴也在基站等方面增加了市场份额。

拥有SEP企业的专利收入颇丰，提高了设置基站和提供5G智能手机等新设备时的价格竞争力。拥有大量SEP的企业所在的国家也可以低价构建5G基础设施，更便于推进新一代服务的普及。

韩国企业中排名第3位的是三星电子，第4位是LG电子，韩国整体专利占比25.23%，比4G时增加了2个百分点。美国在5G领域的份额约为14%，较4G的16%有所下滑，在手机半导体芯片领域拥有专利的美国高通在5G的专利占比方面略微下降，排名在第6位。日本5G的专利占比为5%，较4G时大约下降了4个百分点。从企业看，富士通排在第12位。

不过，在通信领域技术专利是积累的，3G、4G的技术也将继续使用，一直走在前面的欧美在3G、4G方面拥有主要专利。因此，其他国家必须向欧美企业支付庞大的使用费，高通等企业的优势不会一瞬间失去，高通2019年1至3月的知识产权使用费的销售额达到11.22亿美元。

来源：科技部

发布日期:2019-06-06

全文链接:

http://agri.ckcest.cn/file1/M00/06/70/CsgkOFOAhReADTLaAAZmYvwSvic112.pdf

2. Virginia Tech to build the farm of the future（弗吉尼亚理工大学将建设未来农场）

简介：弗吉尼亚理工大学（Virginia Tech）正在创建智能农场创新网络，以建设未来农场。在未来农场，无人机将飞越森林和农作物，与植入地面收获设备的机器人进行通信。牲畜、大田作物和林地上的传感器将与云连接，在云计算中，大数据将转化为关于精确喂养、保护和管理决策的实用信息。植物将被设计成需要更少的水和肥料，在生产更多食物的同时，还能耐受干旱、害虫和洪水。农民将用ipad和拖拉机来经营他们的企业。弗吉尼亚理工大学表示，这是未来的农场，该大学正带头帮助生产者实现效率最大化，同时推动新的农业和自然资源经济。为了在全州范围内继续开发智能农场创新网络，将聘请新的教师加入跨学科团队，以解决对农业和自然资源社区至关重要的广泛问题。Grant表示，“智能农场创新网络的形成只是一个开始。我们希望引领新的弗吉尼亚州经济，这将有助于我们的生产者利用正在改变我们世界的进步技术。”

来源：Future Farming

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全文链接:

http://agri.ckcest.cn/file1/M00/06/70/CsgkOFOAhh2AckS6AAY_RLOJHjw586.pdf

学术文献

1. The Rosario dataset: Multisensor data for localization and mapping in agricultural environments(罗萨里奥数据集:用于农业环境定位和绘图的多传感器数据)

简介：In this paper we present the Rosario dataset, a collection of sensor data for autonomous mobile robotics in agricultural scenes. The dataset is motivated by the lack of realistic sensor readings gathered by a mobile robot in such environments. It consists of six sequences recorded in soybean fields showing real and challenging cases: highly repetitive scenes, reflection, and burned images caused by direct sunlight and rough terrain among others. The dataset was conceived in order to provide a benchmark and contribute to the agricultural simultaneous localization and mapping (SLAM)/odometry and sensor fusion research. It contains synchronized readings of several sensors: wheel odometry, inertial measurement unit (IMU), stereo camera, and a Global Positioning System real-time kinematics (GPS-RTK) system. The dataset is publicly available from http://www.cifasis-conicet.gov.ar/robot/.

来源：INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH

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全文链接:

http://agri.ckcest.cn/file1/M00/06/70/CsgkOFOAfpGAWQZHAD3OQedpTDE097.pdf

2. Multiphase Scouting Control of an Agricultural Field Robot With Reachability Analyses(基于可达性分析的农田机器人多相侦察控制)

简介：Accurate path scouting control of an autonomous agricultural robot is substantially influenced by terrain variability, field patterns, and uncertainties in sensed information. Based on conventional farming techniques, the targeted test crop of strawberries grows in semi-structured environments. Thus in this study, the proposed scouting control architecture comprises of three distinct portions and in each portion different sensors are used. Based on range finder (RF) information, the first region uses a proportional-integral-derivative (PID) controller with logic steps to account for undesirable pop-up events. In the other two portions, vision-based robust controllers are developed, in which a new bound is derived for the focal length uncertainty in vision. Stabilities of the controllers are proven and the reachabilities are analyzed to guarantee that the final state of each portion is within a desired initial region of the next portion controller. The proposed multiphase scouting control is successfully validated for our custom-designed robot in a commercial strawberry farm.

来源：JOURNAL OF DYNAMIC SYSTEMS MEASUREMENT AND CONTROL-TRANSACTIONS OF THE ASME

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全文链接:

http://agri.ckcest.cn/file1/M00/06/70/CsgkOFOAgPqAPc48ACTzFURFc-Y246.pdf

3. In-field high throughput grapevine phenotyping with a consumer-grade depth camera(现场高通量葡萄表型与消费者级深度相机)

简介：Plant phenotyping, that is, the quantitative assessment of plant traits including growth, morphology, physiology, and yield, is a critical aspect towards efficient and effective crop management. Currently, plant phenotyping is a manually intensive and time consuming process, which involves human operators making measurements in the field, based on visual estimates or using hand-held devices. In this work, methods for automated grapevine phenotyping are developed, aiming to canopy volume estimation and bunch detection and counting. It is demonstrated that both measurements can be effectively performed in the field using a consumer-grade depth camera mounted on-board an agricultural vehicle. First, a dense 3D map of the grapevine row, augmented with its color appearance, is generated, based on infrared stereo reconstruction. Then, different computational geometry methods are applied and evaluated for plant per plant volume estimation. The proposed methods are validated through field tests performed in a commercial vineyard in Switzerland. It is shown that different automatic methods lead to different canopy volume estimates meaning that new standard methods and procedures need to be defined and established. Four deep learning frameworks, namely the AlexNet, the VGG16, the VGG19 and the GoogLeNet, are also implemented and compared to segment visual images acquired by the RGBD sensor into multiple classes and recognize grape bunches. Field tests are presented showing that, despite the poor quality of the input images, the proposed methods are able to correctly detect fruits, with a maximum accuracy of 91.52%, obtained by the VGG19 deep neural network.

来源：COMPUTERS AND ELECTRONICS IN AGRICULTURE

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全文链接:

http://agri.ckcest.cn/file1/M00/06/70/CsgkOFOAglWAAWf_AEsr84EIems035.pdf

相关专利

1. BIO-SENSOR HAVING INTERDIGITATED MICROELECTRODE USING RESPONSE OF RECEPTOR AND TARGET BIOPRODUCTS(利用受体和目标生物制品的响应的叉指微电极的生物传感器)

简介：The present invention relates to an interdigitated microelectrode biosensor using the reaction between receptors and target biomaterials, the interdigitated microelectrode biosensor comprising : an insulating layer formed so as to cover all of the sensor formation area of a substrate; a first interdigitated microelectrode formed such that a plurality of first protruding electrodes are arranged in a comb shape on the insulating layer of the substrate; a second interdigitated microelectrode, facing the first interdigitated microelectrode and formed such that a plurality of second protruding electrodes are arranged in a comb shape on the insulating layer of the substrate such that the plurality of second protruding electrodes are

arranged to respectively interdigitate with the plurality of first protruding electrodes formed at the first interdigitated microelectrode; and a plurality of receptors arranged in the space between the first and second interdigitated microelectrodes, which are arranged to interdigitate with each other, so as to specifically react with the target biomaterial, thereby increasing an impedance detection width and detection limit, and improving detection accuracy according to the characteristics of each monomer and each polymer.

来源：美国专利商标局
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