

《整合医学战略研究（2035）》参考

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中国工程科技知识中心医药卫生专业分中心
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[动态信息]

1. **Promising Signs in PCI for the Expanding World of Big Data**

【medscape】 New data support the broadening implementation of artificial intelligence in medicine, suggesting that machine learning may outperform standard statistical methods to forecast patient prognosis after percutaneous coronary intervention (PCI). A machine-learning algorithm was more predictive and discriminative than logistic regression models, trained on the same registry, at identifying patients at risk for 180-day cardiovascular (CV) mortality and 30-day congestive heart failure (CHF) rehospitalization. But it offered no advantage regarding in-hospital mortality among the more than 11,000 patients analyzed.

链接：<https://www.medscape.com/viewarticle/915142>

2. **A stretchable, wireless, wearable health monitor**

【news-medical】 Researchers have developed wearable wireless monitors that contain stretchable electronics and would provide long term health data about the adults, babies and children. These sensors are an advantage over the presently used devices because they are free from the risk of skin allergic reactions and injuries that are associated with conventional adhesive sensors containing conductive gel formulations.

The researchers reported the preliminary experiments with their monitor in the July 24th issue of the journal Advanced Science. The study is titled, “All-in-One, Wireless, Stretchable Hybrid Electronics for Smart, Connected, and Ambulatory

Physiological Monitoring.” The development of the device was supported by the Imlay Innovation Fund at Children's Healthcare of Atlanta, NextFlex (Flexible Hybrid Electronics Manufacturing Institute) as well as from the Institute for Electronics and Nanotechnology at Georgia Tech.

链接: <https://www.news-medical.net/news/20190731/A-stretchable-wireless-wearable-health-monitor.aspx>

3. **3D mapping technology can monitor and track the behavior of engineered cells, tissues**

【 news-medical 】 Medical advancements can come at a physical cost. Often following diagnosis and treatment for cancer and other diseases, patients' organs and cells can remain healed but damaged from the medical condition. In fact, one of the fastest growing medical markets is healing and/or replacing organs and cells already treated, yet remain damaged by cancer, cardiovascular disease and other medical issues. The global tissue engineering market is expected to reach \$11.5 billion by 2022. That market involves researchers and medical scientists working to repair tissues damaged by some of the world's most debilitating cancers and diseases.

链接: <https://www.news-medical.net/news/20190628/3D-mapping-technology-can-monitor-and-track-the-behavior-of-engineered-cells-tissues.aspx>

4. **Future AI Opportunities for Improving Care Delivery, Cost, and Efficacy**

【 hitinfrastructure 】 With its ability to identify effective and economical services and treatments, artificial intelligence has the potential to create savings by eliminating waste in the system. In the United States, healthcare spending represents one-fifth of the economy, with between one-quarter and one-half of all medical expenditures tied to waste. Treatment variability, cost modeling, and drug discovery are three areas contributing waste to the system, but they are also opportunities for healthcare AI applications to help improve both quality and cost.

链接: <https://healthitanalytics.com/news/future-ai-opportunities-for-improving-care-delivery-cost-and-efficacy>

5. **NIH Promotes Big Data to Enhance Eye Disease Research and 3D Printing Revolutionize Orthopedic Implant Surgery?**

【 hitinfrastructure 】 Improving collaboration between specialists and

integrating multiple datasets to leverage big data will be key for advancing research for dry age-related macular degeneration (AMD), according to a new report from a National Institute of Health (NIH) working group. Over 11 million people in the United States are diagnosed with AMD, an eye disease that ultimately results in blindness. It is the leading cause of blindness among individuals 65 years of age and older. The disease can manifest in one of two forms: neovascular (wet) or non-neovascular (dry). While the neovascular form progresses more rapidly, there are several known and proven treatments for the disease. There are no preventive measures for dry AMD nor treatment options.

链接：<https://healthitanalytics.com/news/nih-promotes-big-data-to-enhance-eye-disease-research>

6. 复方阿胶浆百万例整合医学研究昆山区域启动会暨重点合作单位授牌仪式举行

【半岛网】几个月前，复方阿胶浆百万例整合医学研究项目在陕西西安启动，未来五年，东阿阿胶计划在医院、医馆、药店、诊所等开展复方阿胶浆百万例医疗、保健领域应用研究，评估产品在整合的、大样本真实医疗环境下对广泛疾病的作用疗效及安全性。经过前期的筹划准备，7月28日，首个试点研究单位的项目启动会在昆山召开，标志着该项目正式进入实施阶段。该项目由中国工程院原副院长樊代明院士为项目首席指导专家，中国中医科学院副院长唐旭东教授和中国医学科学院血液学研究所副所长程涛教授作为项目中西医联合主研。研究方案通过了主研单位中国中医科学院西苑医院伦理委员会的审查批准。

链接：<http://news.bandao.cn/a/266458.html>

7. 柔软的可穿戴健康监视器使用可拉伸的电子设备

【生物帮】采用可伸缩电子设备构建的无线可穿戴式监视器可以对成人，婴儿和小孩进行舒适，长期的健康监测，而无需担心由导电凝胶传统粘合剂传感器引起的皮肤损伤或过敏反应。柔软且舒适的监视器可以将心电图(ECG)，心率，呼吸率和运动活动数据广播 15 米到便携式记录设备，例如智能手机或平板电脑。电子器件安装在可拉伸的基板上，并通过印刷连接器连接到金色皮肤

状电极，印刷连接器可以与嵌入它们的医用薄膜一起拉伸。“这款健康监测器对于一直在移动的幼儿来说具有一个关键优势，因为柔软的保形装置可以轻柔地融入皮肤，从而适应这种活动，” George W. Woodruff 学校助理教授 Woon-Hong Yeo 说。机械工程系和华莱士 H.库尔特佐治亚理工学院生物医学工程系。

“这是为了满足敏感皮肤可能受到传统显示器伤害的人们的电子健康监测需求。”7月24日在“高级科学”杂志上报道了该监测器的详细情况。该研究得到了亚特兰大儿童医疗保健的 Imlay 创新基金，NextFlex(柔性混合电子制造研究所)以及佐治亚理工学院电子和纳米技术研究所的种子基金的支持。已经对动物模型和人类进行了研究。

链接：<http://www.bio1000.com/gwjz/201907/3126814.html>

8. 疾病防控与治疗：可穿戴设备的又一应用高地

【智能制造网】面对琳琅满目的可穿戴设备，许多用户可谓是挑花了眼。放眼望去，主打运动健康、休闲娱乐、商务办公等卖点的可穿戴设备多种多样，一些医疗健康类可穿戴设备已经成为了整个市场中的热卖产品。那么，到底医疗健康类设备都有哪几类？这些产品都具有哪些功能呢？有市场分析人士指出，目前市场上出现的可穿戴医疗健康类设备主要分为智能手环和耳塞式设备两大类，智能手环由于佩戴方便、操作简单、性价比高而普及较快，耳塞式设备潜藏用户群体较大。据悉，在相关软件的支持下，大多数医疗可穿戴设备能够实现自动感知、记录、分析、管理健康数据等功能，一些医疗可穿戴设备甚至可以被用来治疗慢性疾病。通过分析可穿戴设备记录下来的血氧饱和度检测、实时心率监测、科学睡眠监测等数据，医生可以更加全面和及时的了解病人的身体状况，从而制定切实可行的治疗方案，让病患早日恢复健康。

链接：<https://baijiahao.baidu.com/s?id=1640006539208549880&wfr=spider&for=pc>

9. AI、大数据等技术推动健康产业发展

【信阳晚报网】最新数据显示,医疗健康领域人工智能市场的复合年增长率预计将达到 43.5%,并且市场额将于 2025 年达到 276 亿美元。IBM、微软、苹果、SAP、英特尔、谷歌等全球性领跑企业仍然走在这些人工智能技术相关产业发展的前沿。

链接：http://wanbao.xyxww.com.cn/html/2019-07/31/content_19980.htm

10. 医疗“人工智能”时代：健康大数据要怎么管，怎么用？

【中国医疗保险】2019年CHIMA大会期间，国家卫生健康委医政医管局焦雅辉副局长指出，要加强人工智能产品临床应用的研究与评估，注重智慧医院建设汇总的患者隐私保护和信息安全。中国医院协会信息专业委员会主任委员王才有则在此间撰文表示，无论是系统硬件的自然故障，还是系统软件的天生缺陷；无论是外部不法人员的恶意攻击，还是内部人员的无意疏忽；无论是安全管理制度的缺陷，还是安全技术能力的不足，都会对医疗业务连续性和数据安全造成严重损失，甚至会引发医疗安全事件。

链接：<http://baijiahao.baidu.com/s?id=1640398800140896255&wfr=spider&for=pc>

[文献速递]

1. **Applications and Advances of Magnetoelastic Sensors in Biomedical Engineering: A Review.**

作者：Ren L

文献来源：*Materials (Basel)*.

摘要：We present a comprehensive investigation into magnetoelastic sensors (MES) technology applied to biomedical engineering. This includes the working principles, detection methods, and application fields of MES technology. MES are made of amorphous metallic glass ribbons and are wireless and passive, meaning that it is convenient to monitor or measure the parameters related to biomedical engineering. MES are based on the inverse magnetoelastic (Villari) effect. When MES are subjected to mechanical stress, their magnetic susceptibility will change accordingly. And the susceptibility of MES is directly related to their magnetic permeability. The varying permeability can positively reflect the applied stress. The various detection methods that have been developed for different field applications include measurement of force, stress, and strain, monitoring of various chemical indexes, and consideration of different biomedical parameters such as the degradation rate and force conditions of

artificial bone, as well as various physiological indexes including ammonia level, glucose concentration, bacteria growth, and blood coagulation.

链接: http://pan.ckcest.cn/rcservice//doc?doc_id=40333

2. **3D Modelling and Printing Technology to Produce Patient-Specific 3D Models.**

作者: Birbara NS

文献来源: *Heart Lung Circ.*

摘要: A comprehensive knowledge of mitral valve (MV) anatomy is crucial in the assessment of MV disease. While the use of three-dimensional (3D) modelling and printing in MV assessment has undergone early clinical evaluation, the precision and usefulness of this technology requires further investigation. This study aimed to assess and validate 3D modelling and printing technology to produce patient-specific 3D MV models.

链接: http://pan.ckcest.cn/rcservice//doc?doc_id=40334

3. **A Preliminary Investigation into the Accuracy of 3D Modeling and 3D Printing in Forensic Anthropology Evidence Reconstruction.**

作者: Carew RM

文献来源: *J Forensic Sci.*

摘要: There is currently no published empirical evidence-base demonstrating 3D printing to be an accurate and reliable tool in forensic anthropology, despite 3D printed replicas being exhibited as demonstrative evidence in court. In this study, human bones (n = 3) scanned using computed tomography were reconstructed as virtual 3D models (n = 6), and 3D printed using six commercially available printers, with osteometric data recorded at each stage. Virtual models and 3D prints were on average accurate to the source bones, with mean differences from -0.4 to 1.2 mm (-0.4% to 12.0%). Interobserver differences ranged from -5.1 to 0.7 mm (-5.3% to 0.7%). Reconstruction and modeling parameters influenced accuracy, and prints produced using selective laser sintering (SLS) were most consistently accurate. This preliminary investigation into virtual modeling and 3D printer capability provides a novel

insight into the accuracy of 3D printing osteological samples and begins to establish an evidence-base for validating 3D printed bones as demonstrative evidence.

链接: http://pan.ckcest.cn/rcservice//doc?doc_id=40336

4. **Surveillance of Unruptured Intracranial Saccular Aneurysms Using Noncontrast 3D-Black-Blood MRI: Comparison of 3D-TOF and Contrast-Enhanced MRA with 3D-DSA.**

作者: Zhu C

文献来源: *AJNR Am J Neuroradiol.*

摘要: Patients with unruptured intracranial aneurysms routinely undergo surveillance imaging to monitor growth. Angiography is the criterion standard for aneurysm diagnosis, but it is invasive. This study aimed to evaluate the accuracy and reproducibility of a 3D noncontrast black-blood MR imaging technique for unruptured intracranial aneurysm measurement in comparison with 3D-TOF and contrast-enhanced MRA, using 3D rotational angiography as a reference standard.

链接: http://pan.ckcest.cn/rcservice//doc?doc_id=40335

5. **A privacy protection method for health care big data management based on risk access control.**

作者: Shi M

文献来源: *Health Care Manag Sci.*

摘要: With the rapid development of modern information technology, the health care industry is entering a critical stage of intelligence. Faced with the growing health care big data, information security issues are becoming more and more prominent in the management of smart health care, especially the problem of patient privacy leakage is the most serious. Therefore, strengthening the information management of intelligent health care in the era of big data is an important part of the long-term sustainable development of hospitals. This paper first identified the key indicators affecting the privacy disclosure of big data in health management, and then established the risk access control model based on

the fuzzy theory, which was used for the management of big data in intelligent medical treatment, and solves the problem of inaccurate experimental results due to the lack of real data when dealing with actual problems. Finally, the model is compared with the results calculated by the fuzzy tool set in Matlab. The results verify that the model is effective in assessing the current safety risks and predicting the range of different risk factors, and the prediction accuracy can reach more than 90%.

链接：http://pan.ckcest.cn/rcservice//doc?doc_id=40337

6. 一种面向医疗大数据安全共享的新型区块链技术

作者：余维

文献来源：*小型微型计算机系统*

摘要：海量的医疗数据不仅蕴含巨大价值,也隐含大量的个人隐私.针对医疗数据的信息安全问题,本文提出一种基于区块链的全同态医疗数据安全共享方案,在去中心化网络中可对密文状态的医疗数据进行计算和应用.通过区块链技术和全同态加密技术结合,首先将中心化网络中的医疗机构、患者和第三方的数据处理中心等中心化节点映射在区块链网络中实现去中心化达到各节点完全信任.然后通过智能合约调用全同态加密算法实现在共享双方间只有密文数据传输并且可以进行密文计算.最终实现在不影响医疗大数据分析 and 实际应用的情况下,确保个人数据的隐私安全、数据授权分发和安全传输的目标.

链接：http://pan.ckcest.cn/rcservice//doc?doc_id=40339

7. 区域医疗医学影像交互信息共享方法仿真

作者：黄永刚.

文献来源：*计算机仿真*

摘要：医学影像交互信息共享是实现区域医疗信息化工程的一项关键内容,信息资源利用率和共享效率是实现医疗影像信息化建设应解决的主要问题。针对目前信息共享方法存在的可共享信息吞吐量低、效率低以及资源利用率不高等问题,提出一种新的区域医疗影像交互信息共享方法。根据影像交互信息加权向量的属性压缩结果得到语义指向性特征向量,对其进行量化编

码;依据信息编码的唯一标识,结合数据清洗规则对特征向量进行封装处理,对封装处理后的数据进行质量评价,构建面向区域医疗影像交互信息的质量评价模型。

链接: http://pan.ckcest.cn/rcservice//doc?doc_id=40340

8. 基于互联网+的医学装备计量管理服务平台建设研究

作者: 陈曦

文献来源: *中国医学装备*

摘要: 设计基于互联网+的医学装备计量管理服务平台,以满足患者、医院和监管部门等各方需求,实现医学计量管理的数字化、公众化和透明化。方法:运用互联网+技术建立专项的计量信息数据库和客户端系统,通过互联网移动终端进行计量数据的查询、录入、修改等操作。结果:实现了医学计量管理的信息化和网络化,使医学工程和监管部门摆脱了繁琐的纸质计量证书记录,提升了工作效率;平台融合了医学装备计量信息在线管理和现场管理,整合了计量数据资源,有效防止了漏检、错检等现象的发生,医学装备受检率达到了100%。

链接: http://pan.ckcest.cn/rcservice//doc?doc_id=40338

9. 3D 打印技术在儿童腹膜后神经母细胞瘤血管骨骼化手术中的应用价值探讨

作者: 杨超

文献来源: *临床小儿外科杂志*

摘要: 目的探讨 3D 打印技术在儿童腹膜后神经母细胞瘤血管骨骼化手术中的应用价值。方法以 2016 年 1 月至 2018 年 6 月重庆医科大学附属儿童医院收治的腹膜后神经母细胞瘤患儿为研究对象,符合入选标准的 40 例病例根据术前是否进行 3D 肿瘤模型打印分为 3D 打印组和非 3D 打印组。记录肿瘤大小、手术时间、手术切除率、并发症发生率等资料,术后对患儿家属进行问卷调查,并对调查结果进行统计分析。结果 3D 打印组共 15 例,男 7 例,女 8 例,平均年龄(40.5±28.6)个月;非 3D 打印组共 25 例,男 13 例,女 12 例,平均年龄(43.3±24.8)个月。3D 模型显示肿瘤与临近脏器、血管间的位置关系清晰。

链接: http://pan.ckcest.cn/rcservice//doc?doc_id=40341

10. 大数据分析在智慧医疗辅助诊断中的应用与发展趋势

作者：和海妍

文献来源：《国际检验医学杂志》

摘要：智慧医疗以临床大数据为基础,以物联网、云计算、人工智能等技术为手段,是一种以患者数据为中心的医疗服务模式。该文介绍了当前智慧医疗和大数据概况,分析总结了当前大数据分析在智慧医疗辅助诊断中的应用,包括在医学检验、医学图像分析、临床决策支持系统以及远程诊疗中的应用,并对大数据分析在智慧医疗诊断中的挑战及未来发展趋势进行了展望。

链接：http://pan.ckcest.cn/rcservice//doc?doc_id=40342

[研究报告]

1. WHO GLOBAL REPORT ON TRADITIONAL AND COMPLEMENTARY MEDICINE 201.

发布源：WHO

发布时间：2019 年

摘要："Traditional and complementary medicine (T&CM) is an important and often underestimated health resource with many applications, especially in the prevention and management of lifestyle-related chronic diseases, and in meeting the health needs of ageing populations. Many countries are seeking to expand coverage of essential health services at a time when consumer expectations for care are rising, costs are soaring, and most budgets are either stagnant or being reduced. Given the unique health challenges of the 21st century, interest in T&CM is undergoing a revival.

Monitoring health trends is a core function of the World Health Organization (WHO) and is key to supporting countries in generating evidence-based policies and strategic plans. This report reviews global progress in T&CM over the past two decades and is based on contributions from 179 WHO Member States. It clearly shows that more and more countries are recognizing the role of T&CM in their national health systems. For instance, by 2018, 98 Member States had

developed national policies on T&CM, 109 had launched national laws or regulations on T&CM, and 124 had implemented regulations on herbal medicines.

Countries aiming to integrate the best of T&CM and conventional medicine would do well to look not only at the many differences between the two systems, but also at areas where both converge to help tackle the unique health challenges of the 21st century. In an ideal world, traditional medicine would be an option offered by a well-functioning, people-centred health system that balances curative services with preventive care.

WHO is halfway through implementing the WHO Traditional Medicine Strategy 2014–2023. Our current focus is to develop norms, standards and technical documents based on reliable information and data, to support Member States in providing safe, qualified and effective T&CM services and their appropriate integration into health systems for achieving universal health coverage and the Sustainable Development Goals. I am very pleased to introduce the WHO global report on traditional and complementary medicine 2019. I believe that this report provides valuable information for policy-makers, health professionals and the public for capitalizing on the potential contribution of T&CM to health and well-being."

链接: http://pan.ckcest.cn/rcservice//doc?doc_id=41758

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