

《“健康中国”智慧医疗生态体系发展战略研究》

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
中国医学科学院医学信息研究所

2022 年 11 月 15 日

[动态信息]

1. Remote Healthcare Delivery Program Improves Cardiovascular Health

【mhealthintelligence】 A remote healthcare delivery program implemented by Mass General Brigham displayed the ability to manage and reduce high blood pressure while simultaneously improving access for traditionally underserved patient populations.

链接:

<https://mhealthintelligence.com/news/remote-healthcare-delivery-program-improves-cardiovascular-health>

[文献速递]

1. Artificial Intelligence Algorithm Qualification: A Quality by Design Approach to Apply Artificial Intelligence in Pharma

作者: James M. Hillis; Bernardo C. Bizzo;

来源: Seminars in neurology

摘要: Artificial intelligence is already innovating in the provision of neurologic care. This review explores key artificial intelligence concepts; their application to neurologic diagnosis, prognosis, and treatment; and challenges that await their broader adoption. The development of new diagnostic biomarkers, individualization of prognostic information, and improved access to treatment are among the plethora of possibilities. These advances, however, reflect only the tip of the iceberg for the ways in which artificial intelligence may transform neurologic care in the future.

链接:

https://pan.ckcest.cn/rcservice//doc?doc_id=107337

2. Artificial Intelligence and Medical Humanities

作者: Ostherr, Kirsten

来源: The Journal of medical humanities

摘要: The use of artificial intelligence in healthcare has led to debates about the role of human clinicians in the increasingly technological contexts of medicine. Some researchers have argued that AI will augment the capacities of physicians and increase their availability to provide empathy and other uniquely human forms of care to their patients. The human vulnerabilities experienced in the healthcare context raise the stakes of new technologies such as AI, and the human dimensions of AI in healthcare have particular significance for research in the humanities. This article explains four key areas of concern relating to AI and the role that

medical/health humanities research can play in addressing them: definition and regulation of "medical" versus "health" data and apps; social determinants of health; narrative medicine; and technological mediation of care. Issues include data privacy and trust, flawed datasets and algorithmic bias, racial discrimination, and the rhetoric of humanism and disability. Through a discussion of potential humanities contributions to these emerging intersections with AI, this article will suggest future scholarly directions for the field.

链接:

https://pan.ckcest.cn/rcservice//doc?doc_id=107339

3. Brain Tumor Imaging: Applications of Artificial Intelligence

作者: Afridi M.; Jain A.; Aboian M.; Payabvash S.;

来源: Seminars in Ultrasound, CT, and MRI

摘要: 2022 Elsevier Inc. Artificial intelligence has

become a popular field of research with goals of integrating it into the clinical decision-making process. A growing number of predictive models are being employed utilizing machine learning that includes quantitative, computer-extracted imaging features known as radiomic features, and deep learning systems. This is especially true in brain-tumor imaging where artificial intelligence has been proposed to characterize, differentiate, and prognostication. We reviewed current literature regarding the potential uses of machine learning-based, and deep learning-based artificial intelligence in neuro-oncology as it pertains to brain tumor molecular classification, differentiation, and treatment response. While there is promising evidence supporting the use of artificial intelligence in neuro-oncology, there are still more investigations needed on a larger, multicenter scale along with a streamlined and standardized image

processing workflow prior to its introduction in routine clinical decision-making protocol.

链接:

https://pan.ckcest.cn/rcservice//doc?doc_id=107338

4. Supporting artificial intelligence and machine learning with biomedical data

作者: Cathie Miller

来源: Drug target review.

摘要: The use of machine learning (ML) in drug discovery requires ample amounts of biomedical data. A defined cohort with verified and characterised data, along with integrated Hematoxylin and Eosin (H&E) images and associated data, supports artificial intelligence (AI) applications within target discovery/ drug development workflows and digital pathology programmes.

链接:

https://pan.ckcest.cn/rcservice//doc?doc_id=107340

5. The emerging role of artificial intelligence in multiple sclerosis imaging

作者: Afzal, H. M. Rehan; Luo, Suhuai; Ramadan, Saadallah; Lechner-Scott, Jeannette;

来源: Multiple sclerosis: clinical and laboratory research

摘要: Background: Computer-aided diagnosis can facilitate the early detection and diagnosis of multiple sclerosis (MS) thus enabling earlier interventions and a reduction in long-term MS-related disability. Recent advancements in the field of artificial intelligence (AI) have led to the improvements in the classification, quantification and identification of diagnostic patterns in medical images for a range of diseases, in particular, for MS. Importantly, data generated using AI techniques are

analyzed automatically, which compares favourably with labour-intensive and time-consuming manual methods.

Objective: The aim of this review is to assist MS researchers to understand current and future developments in the AI-based diagnosis and prognosis of MS. **Methods:** We will investigate a variety of AI approaches and various classifiers and compare the current state-of-the-art techniques in relation to lesion segmentation/detection and prognosis of disease. After briefly describing the magnetic resonance imaging (MRI) techniques commonly used, we will describe AI techniques used for the detection of lesions and MS prognosis. **Results:** We then evaluate the clinical maturity of these AI techniques in relation to MS. **Conclusion:** Finally, future research challenges are identified in a bid to encourage further improvements of the methods.

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https://pan.ckcest.cn/rcservice//doc?doc_id=107341

6. Artificial intelligence for stepwise diagnosis and monitoring of COVID-19

作者： Hengrui, Liang; Yuchen, Guo; Xiangru, Chen; Keng-Leong, Ang; Yuwei, He; Na, Jiang; Qiang, Du; Qingsi, Zeng; Ligong, Lu; Zebin, Gao; Linduo, Li; Quanzheng, Li; Fangxing, Nie; Guiguang, Ding; Gao, Huang; Ailan, Chen; Yimin, Li; Weijie, Guan; Ling, Sang; Yuanda, Xu; Huai, Chen; Zisheng, Chen; Shiyue, Li; Nuofu, Zhang; Ying, Chen; Danxia, Huang; Run, Li; Jianfu, Li; Bo, Cheng; Yi, Zhao; Caichen, Li; Shan, Xiong; Runchen, Wang; Jun, Liu; Wei, Wang; Jun, Huang; Fei, Cui; Tao, Xu; Fleming Y. M., Lure; Meixiao, Zhan; Yuanyi, Huang; Qiang, Yang; Qionghai, Dai; Wenhua, Liang; Jianxing, He; Nanshan, Zhong;

来源： European radiology.

摘要： Abstract Background Main challenges for COVID-19 include the lack of a rapid diagnostic test, a suitable tool to monitor and predict a patient's clinical course

and an efficient way for data sharing among multicenters. We thus developed a novel artificial intelligence system based on deep learning (DL) and federated learning (FL) for the diagnosis, monitoring, and prediction of a patient's clinical course. Methods CT imaging derived from 6 different multicenter cohorts were used for stepwise diagnostic algorithm to diagnose COVID-19, with or without clinical data. Patients with more than 3 consecutive CT images were trained for the monitoring algorithm. FL has been applied for decentralized refinement of independently built DL models. Results A total of 1,552,988 CT slices from 4804 patients were used. The model can diagnose COVID-19 based on CT alone with the AUC being 0.98 (95% CI 0.97 - 0.99), and outperforms the radiologist's assessment. We have also successfully tested the incorporation of the DL diagnostic model with the FL framework. Its auto-segmentation analyses correlated well with those by radiologists and achieved a

high Dice's coefficient of 0.77. It can produce a predictive curve of a patient's clinical course if serial CT assessments are available. Interpretation The system has high consistency in diagnosing COVID-19 based on CT, with or without clinical data. Alternatively, it can be implemented on a FL platform, which would potentially encourage the data sharing in the future. It also can produce an objective predictive curve of a patient's clinical course for visualization. Key Points ? CoviDet could diagnose COVID-19 based on chest CT with high consistency; this outperformed the radiologist's assessment. Its auto-segmentation analyses co-related well with those by radiologists and could potentially monitor and predict a patient's clinical course if serial CT assessments are available. It can be integrated into the federated learning framework.? CoviDet can be used as an adjunct to aid clinicians with the CT diagnosis of COVID-19 and can potentially be used for

disease monitoring; federated learning can potentially open opportunities for global collaboration.

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https://pan.ckcest.cn/rcservice//doc?doc_id=107342

7. Application of Artificial Intelligence in Early Gastric Cancer Diagnosis

作 者 :

Zili, Xiao; Danian, Ji; Feng, Li; Zhengliang, Li; Zhi jun, Bao;

来源: Digestion

摘要 : Background: With the development of new technologies such as magnifying endoscopy with narrow band imaging, endoscopists achieved better accuracy for diagnosis of gastric cancer (GC) in various aspects. However, to master such skill takes substantial effort and could be difficult for inexperienced doctors. Therefore, a novel diagnostic method based on artificial intelligence (AI) was developed and its effectiveness

was confirmed in many studies. AI system using convolutional neural network has showed marvelous results in the ongoing trials of computer-aided detection of colorectal polyps. Summary: With AI's efficient computational power and learning capacities, endoscopists could improve their diagnostic accuracy and avoid the overlooking or over-diagnosis of gastric neoplasm. Several systems have been reported to achieved decent accuracy. Thus, AI-assisted endoscopy showed great potential on more accurate and sensitive ways for early detection, differentiation, and invasion depth prediction of gastric lesions. However, the feasibility, effectiveness, and safety in daily practice remain to be tested. Key messages: This review summarizes the current status of different AI applications in early GC diagnosis. More randomized controlled trails will be needed before AI could be widely put into clinical practice.

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https://pan.ckcest.cn/rcservice//doc?doc_id=107343

8. Artificial Intelligence-Based Pharmacovigilance in the Setting of Limited Resources

作者: Liang, Likeng;Hu, Jifa;Sun, Gang;Hong, Na;Wu, Ge;He, Yuejun;Li, Yong;Hao, Tianyong;Liu, Li;Gong, Mengchun;

来源: Drug safety: An international journal of medical toxicology and drug experience

摘要: With the rapid development of artificial intelligence (AI) technologies, and the large amount of pharmacovigilance-related data stored in an electronic manner, data-driven automatic methods need to be urgently applied to all aspects of pharmacovigilance to assist healthcare professionals. However, the quantity and quality of data directly affect the performance of AI, and there are particular challenges to implementing AI in limited-resource settings. Analyzing challenges and solutions for AI-based pharmacovigilance in resource-

limited settings can improve pharmacovigilance frameworks and capabilities in these settings. In this review, we summarize the challenges into four categories: establishing a database for an AI-based pharmacovigilance system, lack of human resources, weak AI technology and insufficient government support. This study also discusses possible solutions and future perspectives on AI-based pharmacovigilance in resource-limited settings.

链接:

https://pan.ckcest.cn/rcservice//doc?doc_id=107344

8. Artificial intelligence and clinical deterioration

作者: James, Malycha; Stephen, Bacchi; Oliver, Redfern;

来源: Current opinion in critical care

摘要: To provide an overview of the systems being used to identify and predict clinical deterioration in hospitalised patients, with focus on the current and

future role of artificial intelligence (AI). There are five leading AI driven systems in this field: the Advanced Alert Monitor (AAM), the electronic Cardiac Arrest Risk Triage (eCART) score, Hospital wide Alert Via Electronic Noticeboard, the Mayo Clinic Early Warning Score, and the Rothman Index (RI). Each uses Electronic Patient Record (EPR) data and machine learning to predict adverse events. Less mature but relevant evolutions are occurring in the fields of Natural Language Processing, Time and Motion Studies, AI Sepsis and COVID-19 algorithms. Research-based AI-driven systems to predict clinical deterioration are increasingly being developed, but few are being implemented into clinical workflows. Escobar et al. (AAM) provide the current gold standard for robust model development and implementation methodology. Multiple technologies show promise, however, the pathway to meaningfully affect patient outcomes remains challenging.

链接:

https://pan.ckcest.cn/rcservice//doc?doc_id=107345

[科技报告]

1. WHO Releases Guide to Enhance Delivery of Telehealth Services

发表时间: 2022 年

摘要: Although these services have generally been efficient and accessible, the WHO noted that there is room for improvement and that future optimization is necessary to maintain telehealth use. This led the organization to create a consolidated guide designed to support the process of telehealth implementation among WHO Member States.

链接:

<https://mhealthintelligence.com/news/who-releases-guide-to-enhance-delivery-of-telehealth-services>