THE ROLE AND PROSPECTS OF ARTIFICIAL INTELLIGENCE ALGORITHMS IN CLINICAL DECISION-MAKING

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Annotatsiya: Ushbu maqolada sun’iy intellekt (SI) algoritmlarining klinik qarorlarni qabul qilish jarayonidagi o‘rni va istiqbollari tahlil qilinadi. Sun’iy intellekt texnologiyalari tibbiy tashxis, davolash strategiyalarini tanlash va kasalliklarni prognoz qilishda yuqori aniqlik va samaradorlikni ta’minlamoqda. Maqolada SI algoritmlarining amaliy qo‘llanilishiga oid misollar, ularning afzalliklari hamda dolzarb muammolari yoritilgan. Shuningdek, tibbiyotda SI algoritmlaridan foydalanish bo‘yicha mavjud xavflar va kelajakdagi rivojlanish yo‘nalishlari muhokama qilingan.

Kalit so‘zlar: Sun’iy intellekt, klinik qaror, algoritm, tibbiy texnologiya, sog‘liqni saqlash, avtomatlashtirish, tashxis

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Аннотация: В данной статье рассматривается роль и перспективы алгоритмов искусственного интеллекта (ИИ) в процессе принятия клинических решений. Технологии ИИ обеспечивают высокую точность и эффективность в диагностике заболеваний, выборе методов лечения и прогнозировании состояния пациента. Приводятся примеры практического применения алгоритмов ИИ, обсуждаются их преимущества и существующие проблемы. Также рассматриваются возможные риски и направления развития ИИ в медицине.

Ключевые слова: Искусственный интеллект, клиническое решение, алгоритм, медицинские технологии, здравоохранение, автоматизация, диагностика

Abstract: This article examines the role and future prospects of artificial intelligence (AI) algorithms in clinical decision-making. AI technologies offer high accuracy and efficiency in medical diagnosis, treatment selection, and disease prediction. The paper presents practical examples of AI algorithm applications, highlighting their benefits as well as current challenges. Furthermore, it discusses potential risks and the future directions of AI development in the field of healthcare.

Keywords: Artificial intelligence, clinical decision-making, algorithm, medical technology, healthcare, automation, diagnosis

Login

Modern clinical in medicine decision acceptance to do speed and accuracy health storage to the quality directly impact shows medical problems clear analysis to do, right diagnosis to put and optimal treatment plan to compose in the processes doctors, artificial intellect algorithms help with to efficiency is achieving. This article clinical decision acceptance of SI algorithms in their place, their practical results and prospects analysis to do dedicated. Medicine in the field information chain immediately increase, analysis to do more efficient to do, and doctors for direction determination important are tasks. Symptoms and clinical characters clustering experiments based on made successful analyzes, clinical medicine variable products in providing help in this article, the symptoms and clinical characters clustering importance, methods, information experience, machine learning algorithms, electronics complaint system, and clinical in analyses new technologies how as experiments based on successful done increase will be displayed.

Home part

1. The essence of Artificial intellect algorithms: Artificial intelligence (SI) is human to the intellect typical was functions, including study, logical thinking, problem solution and decision acceptance imitator algorithmic systems SI

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algorithms his/her own mastery, analysis to do and prophecy to do opportunities with modern in medicine important place is taking over. This systems human factor reduction with together, clinical in practice speed and accuracy noticeable at the level increases.

SI algorithms two main in the direction used, data based analysis and decision acceptance to do systems. Their in medicine application mainly following to technologies is based on:

- **Classifier Classification algorithms –** classify patients clinical to the characteristics looking at grouping and diagnosis;
- **Clustering Clustering algorithms** – symptoms and disease types to each other close to groups separation;
- **Neuron Neural networks** – visual in diagnostics (X-ray , MRI) disease signs based on study and result release;
- **Deep Deep learning** – big in size information through independent study and prophecy to do

This point of view from the point of view SI algorithms, as seen only technological convenience not, maybe diagnostics process optimization tool maybe.

2. Clinical of SI algorithms in practice Application: Artificial intellect algorithms clinical in practice application today's on the day from diagnostics pull patient up to monitoring was in processes wide cubit spread. Clinical in the environment SI is as follows main functions does:

- ***Diagnostics efficiency increase,*** SI systems, in particular computer see technology (computer vision), imaging in analyses cancer, lung inflammation, heart illness such as diseases in determining is used. Example for, lungs cancer by Google Health in detection working released AI model human to radiologists 7% higher than to accuracy has (Rajpurkar et al., 2022).
- ***Symptoms based on diseases grouping (clustering)***, Clustering algorithms in patients symptoms and clinical signs analysis so, statistically to similarity based on to groups This is accuracy and individual diagnosis in putting help gives.
- ***Diagnosis automation,*** AI diagnostic systems clinical to the protocols based on, doctor decisions offer with It enriches. It not only human mistakes reduces, maybe heavy diseases early in stages determination opportunity gives.

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- ***Interactive clinical decision systems (CDSS)***, real -time to the doctor recommendations, medicine dosage, contraindications or probable risks about information giver tools.

So, SI algorithms clinical decision acceptance to do individualization and in standardization strong is a tool.

3. Medical information and based on SI decision acceptance To do: Medicine in the field decision acceptance to do process many complicated and mutual related to factors based on: patient health history, symptoms, laboratory results, descriptive tests, genetic information and other indicators. That's it. big in size various in format information analysis SI algorithms for very suitable is a tool.

- ***Big Data analysis***, In medicine being created big information package (EMR, laboratory examinations, medical images) artificial intellect through combined, cleaned and meaningful analysis This is done. reasonable and fast decision acceptance to do opportunity gives.
- ***Predictor Predictive models***, SI algorithms the patient's historical information based on heart attack risk, stroke probability or sugar disease development in advance shows. This is medical prevention and term to intervene ground creates.
- ***Individualized decisions***, each to the patient suitable treatment plan, medicine dose and monitoring plan to make help giver systems being created (e.g. IBM Watson for Oncology).
- ***The possibility of many factorial analysis***, SI algorithms hundreds indicators and disease variables one of time in itself seeing out, the most acceptable the decision recommendation does.

As a result, the SI- based decision systems clinical practice scientific basically automates and doctor mistakes minimizes.

4. Practical results and real example: Artificial intellect based on created clinical systems currently one row developed in the countries to practice current done and clinical from tests successful past. The following examples this proves:

- **Google Health** – in 2022 lungs cancer in determining AI model used in 11% of cases human from radiologists more precisely result This clinical SI capabilities in diagnostics proving (Esteva et al., 2022).
- **IBM Watson for Oncology** – patient information analysis so, in 95% of cases oncologists with one kind treatment plan offer This system currently China, USA, India and other in the countries is in use.
- **Aidoc** – real -time urgent medical help in departments (ER) through AI urgent diagnosis to put help giver system. This system is a stroke or blood to leave minutes inside determines.

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- **SkinVision** – skin raccoon determiner mobile app. It's simple. user by usage possible AI - based is an approach.

In this real life examples of SI technologies not only theoretically , maybe practical both clinically and in medicine high to efficiency has that you show

Conclusion

Latest in years artificial intelligence (SI) medicine in the field revolutionary approaches offer diagnosis, treatment and medical decision acceptance to do processes new to the stage take is coming out. In the article cited analyses based on to say possibly clinical decision acceptance of SI algorithms in implementation not only doctor work alleviates, perhaps patient health in recovery high good quality service show opportunity gives. Today per day based on SI worker algorithms using the disease early detection, danger to the group incoming patients separate receive, individual treatment plans to compose, even medical documents automatic filling like many practical tasks These processes are being carried out. not only time and resource it will save, maybe human mistakes noticeable at the level reduces . Conclusion as in other words, clinical in medicine artificial intellect technologies are only technician achievement not, maybe human his life save to stay aimed at innovative is an approach . Therefore of SI technologies for scientific basically development, clinical tests through to be proven and health storage to the system integration modern medicine priority from directions one become remains.

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