Using Artificial Intelligence Technologies In Medical Diagnosis

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Introduction

- In the past years, there was vast progress in application areas of Artificial Intelligence (AI).
- Various **AI technologies** are already **used in** some fields such as **cybersecurity**, **manufacturing**, **education**, and **logistics.**
- Also, **AI technologies** have been **used in** developing **healthcare systems.**
- One of the best things about **applying AI in healthcare systems** is that AI can be **used to improve** various spheres, such as **gathering** and **processing patient's data for programming surgical robots**.

Introduction (Cont.)

- The major **AI trend in medicine** is **using deep learning in medical diagnosis** to **detect cancer**.
- **Recent study** published in the Journal of the National Cancer Institute **shows** that the **AI system** has achieved a **breast cancer detection accuracy comparable to** an average **breast radiologist**.
- **This seminar introduce** some **AI technologies** that can be used **for medical purposes**.

1. Detecting diseases

- **Applying AI to medical diagnosis provides** numerous **benefits** to the evolving of the **healthcare industry**.
- **AI-based software can tell** whether **a patient has** a certain **disease** even **before** evident **symptoms** appear.
- In their **latest research**, Google proves that a **neural network can** be trained to **detect signs** of **lung cancer** earlier and **faster than** trained **radiologists**.
- Although this program needs to be validated on a larger audience and go through additional tests, the idea itself already engages **growing interest** in **using AI to detect cancer in early stages** .

2. Classifying diseases

- The opportunity of **deep learning** technologies to **analyze images** and **recognize patterns** opens up the potential for creating algorithms to **help doctors diagnose** specific **diseases faster** and more **accurately**.
- Moreover, **such algorithms can continuously learn**, thus **improving** its resulting **quality of guessing** the right **diagnosis** .
- **AI-driven software** can be programmed **to** accurately **spot signs** of a certain disease **in medical images** such as **MRIs**, **x-rays**, and **CT scans**.

2. Classifying diseases (Cont.)

- Some solutions **use AI for cancer diagnosis by processing photos of skin lesions or damages**.
- **Using such tools**, **doctors can diagnose patients** more **accurately** and **prescribe** the most **suitable treatment**.

3. Improving the decision-making process

- **The doctors face some problems such as consider symptoms of patient**, possible **research mistakes**, all the existing **treatment methods**, potential **side effects**, **diseases with** very **similar signs**, and many more aspects.
- **Modern solutions** with **AI technology** already **help doctors** to **overcome research obstacles**, **process** vast amounts of **health data fast**, and **ensure** a holistic **understanding** of a **patient's health** .

4. AI-based treatment solutions

- **When** the **disease** is **detected** and classified, the **treatment** process can **cause additional issues**.
- A **treatment plan** includes **prescribing medicines**, **exercises**, **coordinate care plans**, **help patients manage** their **treatment programs**, and consider the risk of an adverse event.
- **Modern AI algorithms** already **help doctors arrange** a comprehensive approach to **disease management**.
- Moreover, **AI algorithms used to improve surgical robots** that **execute** highly **complex operations** .

5. Making people live longer

- **AI is** often **predicted** to be a key technology **to help people live longer** and **reduce** the **need** for **hospitalization**.
- **AI algorithms** can **process** all the **information about** our **health**, **lifestyle**, and **environment** we live in for us.
- Thus, they **can predict our biological age** and **offer measures** we need to take in order **to stay healthy** .

Fig. 1: AI-Pathway Companion Prostate Cancer from Siemens Healthineers approved for use in Europe as medical device

Fig. 2: AI-Rad Companion Chest CT,
an intelligent software assistant for radiology

Using Surgical Robots.

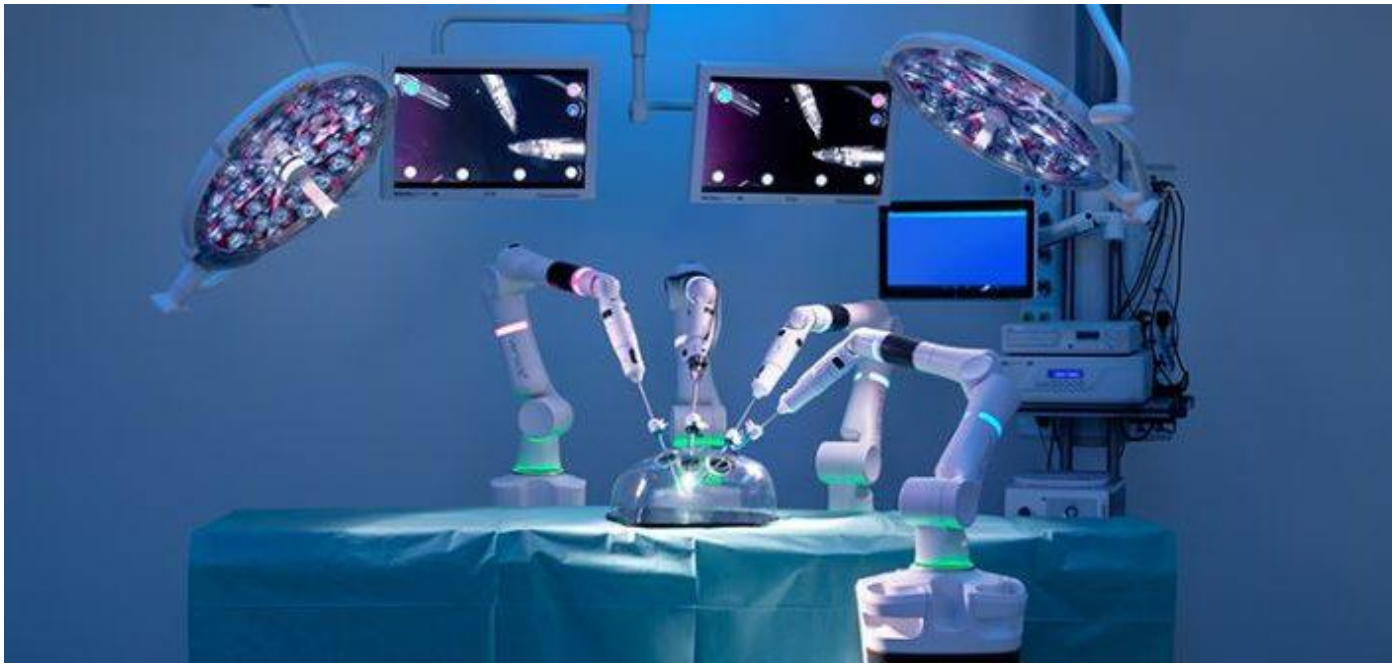

Fig. 3: UK surgical robot installed at French hospital

Using Sterilization Robots.

Fig. 4: Disinfection robots can help with staffing shortages.

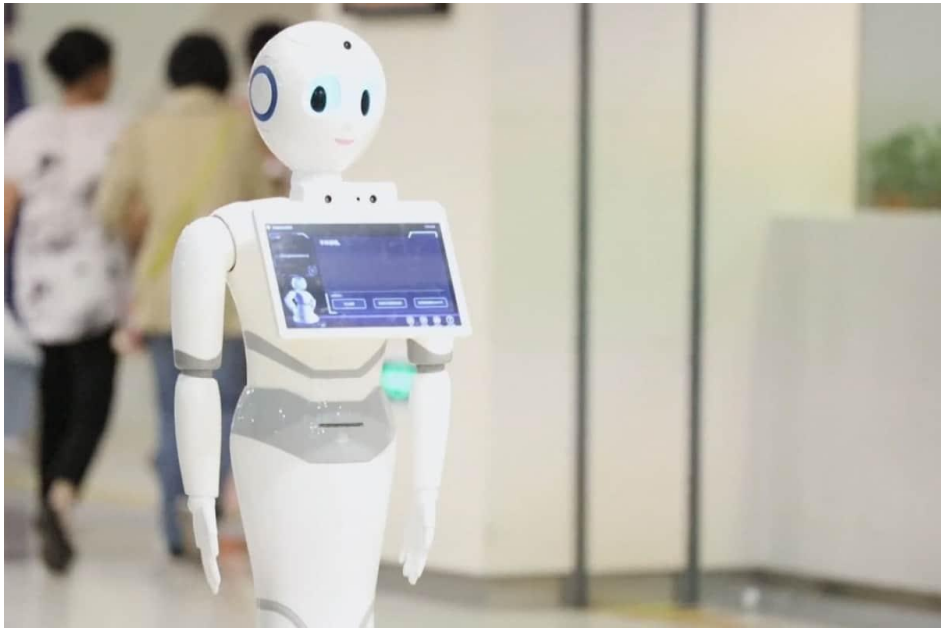

Fig.5: Robot Doctors Are a Real Thing Now

Drones Offer Delivery Of Medical Supplies

Fig. 6: Terra Drone has transported medical samples

Conclusion

- Some successful solutions that use AI to address medical issues:
- **IBM's Watson for Health** supports clinics, governmental programs, researchers, and patients.
- **Google Health** helps patients to measure their fitness program and provides information about their medical conditions, nearest hospitals, and reminders to take medicine.

Conclusion

- **AI-Rad Companion Chest CT** is an AI-powered healthcare solution from Siemens Healthineers that can read the chest CT images, perform automatic measurements, and prepare the medical report .
- **AI-Pathway Companion** is another solution from Siemens Healthineers that is created to optimize care pathways by gathering all the data about a patient and facilitating diagnosis and therapeutic decisions along disease-specific paths.

THANK YOU