Applications of Computing in Healthcare

GROUP 1

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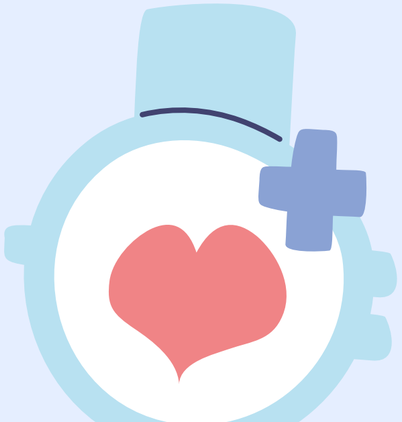

Topics to be discussed

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Uses of Computing in Healthcare

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Advancement of computing in healthcare

Topics to be discussed

3

Advantages and Disadvantages of Computing in Healthcare

Uses of Computing in Healthcare

Computers are essential in modern medicine, enhancing diagnostics and treatment through advanced technology. They operate key medical machinery, including ultrasonography, CT scans, and MRIs, by processing and analyzing complex imaging data to identify conditions with high precision. Automated systems for blood tests also rely on computers to measure and interpret various blood components accurately.

Uses of Computing in Healthcare

Additionally, computers manage and display medical findings through Electronic Health Records (EHRs), consolidating patient information for comprehensive analysis. They enable the creation of detailed 3D models and simulations, which assist in surgical planning and medical education by offering precise visualizations and interactive learning tools. Overall, computers improve diagnostic accuracy, streamline medical workflows, and contribute to better patient care.

Advancement of Computing in Healthcare

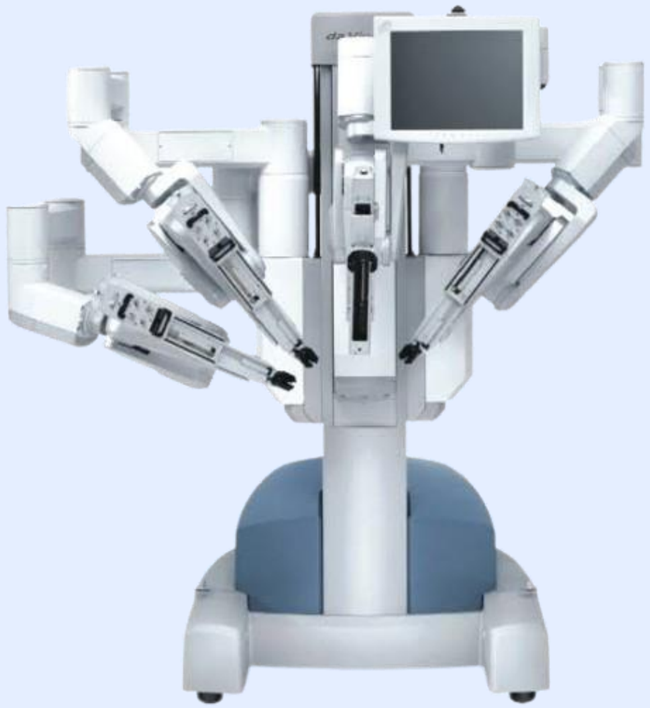
Wearables

-These devices use various detectors, such as biosensors, to collect different data from the patient, such as heart rate, blood pressure, sleep patterns, and activity.

Smartwatch

-Smart watches have the ability to track medical conditions such as cardiovascular disease and seizures, enabling self-monitoring of activity, providing feedback on activity levels, and facilitating communication with healthcare providers.

Advancement of Computing in Healthcare



Surgical Robots

-Robotically assisted surgery was developed to try to overcome the limitations of pre-existing minimally-invasive surgical procedures and to enhance the capabilities of surgeons performing open surgery.

Da Vinci Surgical Robot

-It gives surgeons more precise control for a range of procedures. Using magnified 3D high-definition vision and controls that strap to a surgeon's wrists and hands, the da Vinci System makes tiny, exact incisions that human hands might not otherwise be able to make. This offers enhanced control to surgeons and, since the surgery is less invasive than traditional surgery, a faster healing time for patients.

Advancement of Computing in Healthcare

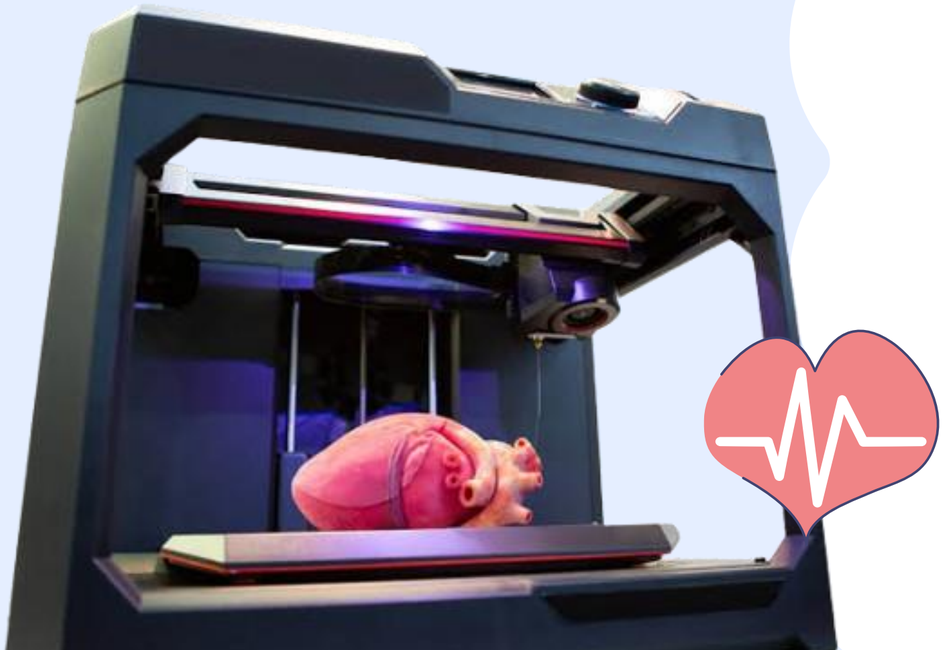
Medical Diagnostics Equipment

-These technologies help in detecting, diagnosing, and monitoring various health conditions, guiding treatment decisions, and improving patient outcomes by providing critical insights into a patient's health status.

Advanced MRI imaging

-There are several advanced MRI techniques for more sophisticated imaging of brain structure and function. The most common advanced imaging techniques include spectroscopy, perfusion, diffusion tensor imaging (DTI), and functional MRI (fMRI).

Advancement of Computing in Healthcare

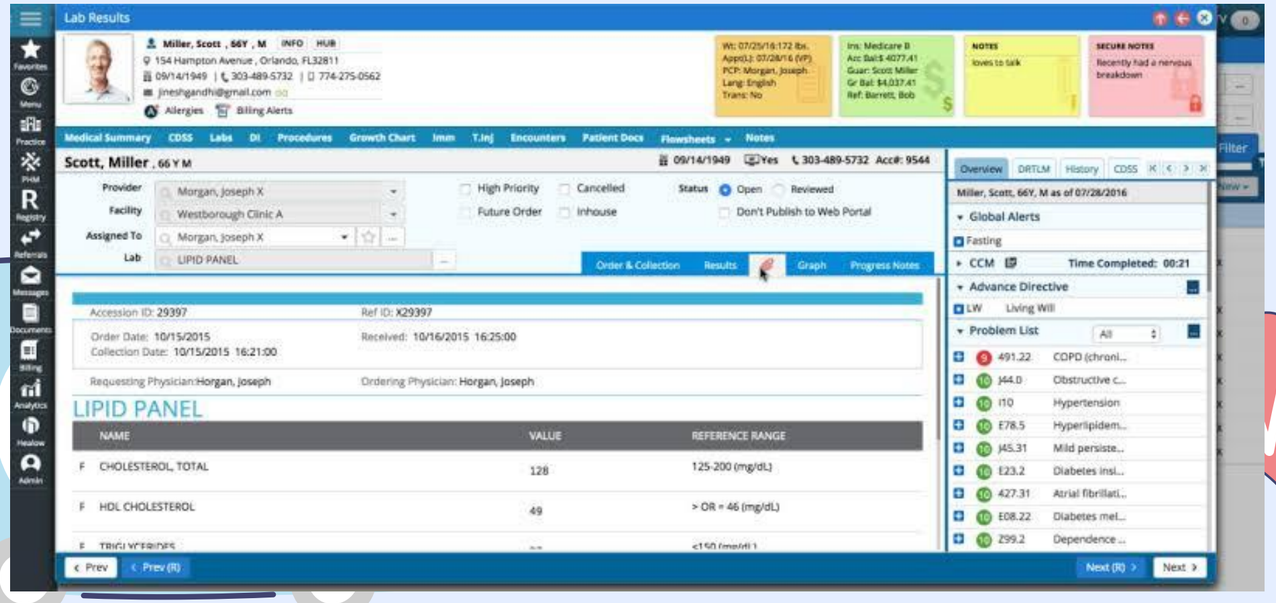


3d Bio Printing

-3D bioprinting is an additive manufacturing process that uses bioinks to print living cells developing structures layer-by-layer which imitate the behavior and structures of natural tissues. Bioinks, that are used as a material in bioprinting, are made of natural or synthetic biomaterials that can be mixed with living cells.

A 22 year old WOMAN from the Netherlands who suffers from a chronic bone disorder which has increased the thickness of her skull from 1.5cm to 5cm, causing reduced eyesight and severe headaches has had the top section of her skull removed and replaced with a 3D printed implant.

Advancement of Computing in Healthcare



Electronic Health Record (EHR)

-is a digital version of a patient's paper chart that provides real-time, patient-centered information accessible to authorized users. EHRs include medical history, diagnoses, medications, treatment plans, immunization dates, and test results, and they allow for sharing across different healthcare providers and organizations.

eClinicalWorks

-eClinicalWorks provides software for electronic health records (EHR) and practice management. Their solutions help healthcare providers manage patient data, streamline workflows, and enhance patient care with features like electronic prescribing, scheduling, and billing.

Advancement of Computing in Healthcare

Telemedicine

-Telemedicine refers to the provision of remote clinical services, via real-time two-way communication between the patient and the healthcare provider, using electronic audio and visual means.

KonsultaMD

-KonsultaMD is a telemedicine service that provides 24/7 access to licensed doctors to address your general and mental health concerns, no appointment needed. You can consult a doctor via chat, voice or video call from the comfort of your home.

Advantages of Computing in Healthcare

Provides continuous health and behavioural monitoring, with emergency alerts for enhanced personal care.

Offers precise and accurate surgical procedures, better visualization, and reduces surgeon fatigue.

A safe, non-invasive imaging method that improves patient comfort.

Reduced Need for Donor Tissues

Minimized Surgical Risks

Comprehensive EHR Functionally

Convenience and Flexibility

Disadvantages of Computing in Healthcare

Issues with data accuracy and reliability, security and privacy concerns, and challenges with accessibility due to the digital divide.

Potential for robotic malfunction, a steep learning curve for surgeons, and latency issues during procedures.

High costs, extensive space and infrastructure needs, and complex operation requirements.

Electronic record systems may not be user-friendly.

The systems may require ongoing maintenance and updates.

The systems may not be compatible with all devices or software.

In-person visits can be necessary to diagnose

Limited access to technology

Thank You