National Institute of Technology, Raipur

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BIO MEDICAL ENGINEERING
ASSIGNMENT

submitted by : Karan bhaskar
Roll no : 21111025,
Branch : Biomedical engineering
samester : first(2021-2022)
NIT Raipur, chhattisgarh

1 FUTURE OF HEALTHCARE

1.1 Introduction

The future of healthcare is shaping up in front of our very eyes with advances in digital healthcare technologies, such as artificial intelligence, VR/AR, 3D-printing, robotics or nanotechnology. We have to familiarize with the latest development in order to be able to control technology and not the other way around. The future of healthcare lies in working hand-in-hand with technology and healthcare technologies in order to stay revelant in the coming years.

1.2 10 Ways Technology Is changing Healthcare

1. Artificial intelligence:-
I believe that artificial intelligence has the potential to redesign healthcare completely. AI algorithms are able to mine medical records, design treatment plans or create drugs way faster than any current actor on the healthcare palette including any medical professional.

2. Virtual reality:-
Virtual reality (VR) is changing the lives of patients and physicians alike. In the future, you might watch operations as if you wielded the scalpel or you could travel to Iceland or home while you are lying on a hospital bed.

3. Augmented reality:-
Augmented reality differs from VR in two respects: users do not lose touch with reality and it puts information into eyesight as fast as possible. These distinctive features enable AR to become a driving force in the future of medicine; both on the healthcare providers' and the receivers' side.

4. Healthcare trackers, wearables and sensors:-
the future of medicine and healthcare is closely connected to the empowerment of patients as well as individuals taking care of their own health through technologies, I cannot leave out health trackers, wearables and sensors from my selection. They are great devices to get to know more about ourselves and retake control over our own lives.

5. Medical tricorder:-
When it comes to gadgets and instant solutions, there is the great dream of every healthcare professional: to have one almighty and omnipotent device, with which you can diagnose and analyze every disease. It even materialized – although only on screen – as the medical tricorder in Star Trek. When Dr McCoy grabbed his tricorder and scanned a patient, the portable, hand–held device immediately listed vital signs, other parameters, and a diagnosis. It was the Swiss Army knife for physicians.

6. Genome sequencing:-
The whole human genome project cost approximately 2.7 billion dollars for the US government, which is an insanely huge amount of money. Especially if you consider that in January, 2017, DNA sequencing giant illumina unveiled a new machine that the company says is "expected one day" to order up your whole genome for less than 100 dollars.

7. Revolutionizing drug development:-
the process of developing new drugs is too long and too expensive. However, there are ways to improve drug development with methods ranging from artificial intelligence to in silico trials. Such new technologies and approaches already are and will be dominating the pharmaceutical landscape in the years to come.

8. Nanotechnology:-
We are living at the dawn of the nanomedicine age. I believe that nanoparticles and nanodevices will soon operate as precise drug delivery systems, cancer treatment tools or tiny surgeons.

9. Robotics:-
One of the most exciting and fastest growing fields of healthcare is robotics; developments range from robot companions through surgical robots until pharmabotics, disinfectant robots or exoskeletons.

10. 3D-printing:-
3D-printing can bring wonders in all aspects of healthcare. We can now print biotissues, artificial limbs, pills, blood vessels and the list goes on and will likely keep on doing so.