**Machine Learning in Healthcare**

Machine learning can be used in the techniques and tools that can help in the diagnosis of diseases. Here are a few examples of AI techniques in healthcare:

1. Heart Disease Diagnosis: In early 2018, scientists from Google Life Sciences-Alphabet Inc.'s research organization created a machine learning algorithm to analyze the risk of a patient suffering from cardiovascular disease. They analyzed a scanned image of the patient's eye and then accurately inferred various types of data, including the patient's age, blood pressure and smoking status. This allowed the scientists to predict the patient's risk of cardiovascular disease. In order to train the algorithm, they used machine learning to analyze the medical data of nearly 300,000 patients. As a result, the accuracy of the algorithm in identifying patients with cardiovascular disease was as high as 70%, which is close to the accuracy of traditional cardiovascular disease risk prediction methods, such as the measurement of blood cholesterol levels.
2. Robotic Surgery: Robotic surgery is a high-grossing machine learning applications in healthcare. This kind of application is mainly divided into four subcategories such as automatic suturing, surgical skill evaluation, improvement of robotic surgical materials, and surgical workflow modeling. Suturing is the process of sewing up an open wound. It is an important part of surgery but it can also be time-consuming. Automation can potentially reduce the length of surgical procedures and surgeon fatigue. This may be particularly significant in remote or telesurgery, where any lag between human surgical commands and robot responses can present complications. In 2016, Johns Hopkins University announced that their research was part of a team which developed a robotic surgical system called STAR or the *Smart Tissue Autonomous Robot*. The system uses 3D computer imaging and has sensors to help guide the robot through the suturing process. The robot’s performance was compared to the work of five

human surgeons in three different procedures: open surgery, laparoscopic and robot assisted surgery. Overall, the researchers reported comparable or better results to standard surgical performance.

1. Personalized Treatment: From the patient aspect, AI can be initially applied for remote follow-ups, medication reminders, real-time disease counseling and early warnings of symptoms. Also, from the perspective of clinicians, AI can help collect voice information such as medical history, connect electronic medical records systems and reduce the workload of clinicians. In the future, cognitive computers which are devices that can be trained through machine learning or deep learning algorithms and can solve problems without human assistance. This can help clinicians make accurate decisions and predict patient outcomes. With the help of AI, it is most likely to implement an accurate medical plan that customizes healthcare for each patient. Clinicians should know how to use AI technology and gain experience in the clinical practice of applying AI to improve cardiovascular disease diagnosis and treatment by analyzing large sets of data. Precision medicine will customize healthcare for each individual patient and is most likely to be achieved with the help of AI. Through machine learning and big data analytics, AI can help clinicians to make more accurate predictions for patients.

**Question:**

**How does Google’s AI algorithm predict Heart-Disease?**

**Answer:**

Analyzes a patient's eye

Go to 8:05 in video

<https://www.youtube.com/watch?v=Nj2YSLPn6OY>

**Resources:**

Explains in detail about Google’s AI algorithm when analyzing the patient’s eye

* <https://www.theverge.com/2018/2/19/17027902/google-verily-ai-algorithm-eye-scan-heart-disease-cardiovascular-risk>

Has a list of applications of machine learning in healthcare

* <https://www.ubuntupit.com/top-10-potential-applications-of-machine-learning-in-healthcare/>