

Deakin University

SLG788- OnTrack Submission

Task 1.1 P

Submitted by

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Attempt: 1
Date: 12/03/2023

Target Grade : (For Tasks with split focus)

Task Details –

1. What is the domain and specific application you have selected? (e.g., domain: Healthcare, application: COVID-19 detection using CT imaging. Please provide the application other than this example).

Domain: Health Care

Application: Continuous Glucose Monitor (CGM) is a device used for monitoring blood glucose on continual basis by insulin – requiring people with diabetics. This is a small electrode placed under the skin and transmitter sending the readings during specific intervals to mobile phones.

2. Why is it important to have AI solutions in this domain? Provide the reason and justification (minimum 100 words)

Health care domain is one of the domains where different artificial intelligence are created and tested in an effective way. Initially AI was developed to assist the doctors in surgeries. There were invention of microscopic cameras that can be inserted to inner body through a small hole. This helped many health practitioners in analysing actual problems of patients. In healthcare domain, one of the applications used is Continuous Glucose Monitor is an artificial intelligence-based device that helps in monitoring diabetics. CGM has a small electrode placed under the skin, a transmitter sending the readings of insulin during specific intervals and a receiver. The sensor in the device shares the readings to any mobile phones through specific application. The data displays all the vitals of the people. This has benefited to many people with diabetic. This not only gives the data for diabetic, but this can give a complete blood study in a click away.

3. What is the difference between traditional applications and AI based applications in this domain? (Minimum 100 words)

We use the example of Continuous Glucose Monitoring application in healthcare to explain the differences used in traditional approach and AI based approach.

Traditional Approach in Healthcare Domain:

Before the invention of Artificial Intelligence, people used to check insulin level by pricking the forefingers. The blood droplets are placed on the reading test strips. The test strips are inserted to Glucometer. The glucometer readings the data and only the insulin level is displayed. People have to record the test results and share that with medical professionals.

AI Based application:

Continuous Glucose Monitoring is an AI based devices. The device works with electrode, application and transmitter. The electrodes are placed under the skin. The transmitter reads the insulin levels during specific intervals and shares the vitals through application. Through this device, not only insulin details are generated, other blood vitals are also collected along with and shared to the people through applications. Doctors can get the history of the patients from the device memory.

4. What are the challenges and Strength of AI in that domain? Please refer to 1.5 Strength and challenge of AI models in the unit site and provide answer based on the strength and challenges discussed there. 10 items for strength and challenges are discussed, and you only need to discuss 6 out of 10 of them (Minimum 200 words)

Strength of Artificial Intelligence in Healthcare:

1. Provides real time data

A critical component of diagnosing and addressing medical issues is acquiring accurate information in a timely manner. With AI, doctors and other medical professionals can leverage immediate and precise data to expedite and optimize critical clinical decision-making. Generating more rapid and realistic results can lead to improved preventative steps, cost-savings and patient wait times.

2. Saves time and resources

As more vital processes are automated, medical professionals have more time to assess patients and diagnose illness and ailment. AI is accelerating operations to save medical establishments precious productivity hours. In any sector, time equals money, so AI has the potential to save hefty costs.

3. Assist in research

AI enables researchers to amass large swaths of data from various sources. The ability to draw upon a rich and growing information body allows for more effective analysis of deadly diseases. Related to real-time data, research can benefit from the wide body of information available, as long as it's easily translated.

4. May reduces physical stress

AI helps streamline procedures, automate functions, instantly share data and organize operations, all of which help relieve medical professionals of juggling too many tasks.

5. Streamlines Task

Innovations include appointment-scheduling, translating clinical details and tracking patient histories. AI is enabling healthcare facilities to streamline more tedious and meticulous tasks.

6. Reduces overall cost of running the business

Using AI to make processes such as diagnosis more efficient can often be run at a fraction of the original cost. Patients are treated faster and more effectively, reducing admissions, waiting times, and the need for beds.

Challenges of AI in Health care

1. Needs human surveillance

Years of education are required for medical professionals to operate with AI in healthcare domain

2. May lead to unemployment

AI helps in cost cutting and reduces clinician pressure. This can also render some jobs redundant.

3. Inaccuracies are still possible

Medical AI depends heavily on diagnosis data available from millions of catalogued cases. In cases where little data exists on particular illnesses, demographics, or environmental factors, a misdiagnosis is entirely possible

4. Susceptible to security risk

AI is generally dependent on data networks; AI systems are susceptible to security risks. The onset of Offensive AI, improved cyber security will be required to ensure the technology is sustainable.

5. Data digitalization and consolidation

The difficulty is attributed to the fragmented and unorganized health data spread across various data systems and organizations

6. Patients preparing for new methods.

Patients need to be made aware of how a doctor can accurately evaluate their conditions or check a patient's blood pressure without seeing them in person. When patients realize that robotic-based surgery means less scarring, less blood loss, and a quicker recovery, they may be more open to AI. Trust will develop among patients as they become familiar with the benefits of artificial intelligence in healthcare.