MILITARY INSTITUTE OF SCIENCE AND TECHNOLOGY
Department of Computer Science and Engineering
Project Proposal of IDP

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1. **Group No:** B3   **Date:** 19-09-2022

2. **Section:** B   **Session**: 2019-2020

3. **Program:** CSE-20

4. **Tentative Title**: Health AI: A Personal Healthcare Companion

5. **Background and Present State of the Problem**:

   Living a healthy lifestyle can help prevent chronic diseases and long-term illnesses. Based on health there is a lot of research, projects, documents & applications. But there is only a few such documents or applications which can act like a personal doctor or a healthcare assistant. The existing applications have a lot of limitations. The application named "Health mug" is based on AI analysis of patient's symptoms. The app assigns doctors to help the patient by using patient's profile. But this app cannot suggest any physical activities to the patient. It can be called an app to connect with the doctors. The app "Life Plus Bangladesh" is also an online doctor appointment booking app and a medicine shop. It gives telemedicine & ambulance services too. This app can be called a personal online medical service app but not a health assistant. There is also a web application named "Health Prediction Using Data Mining" which can be called a personal health assistant, but it has some issues like it is not dynamic, its autonomous system is not good, cannot talk with the customer. Customer needs to input his health in static way. Basically, there is no app on the market which can talk with the patient to analyze the symptoms and give predictions on patient's health problems along with giving valuable suggestions.

6. **Objectives with Specific Aims and Possible Outcome**:
   1) To make a Personal Healthcare Companion Application System.

2) To be able to detect common illness by talking with the patient about the symptoms with the help of AI.
3) To suggest available primary home treatments and general instructions based on the detected illness with the help of AI.
4) To suggest doctors based on the detected sickness and doctors' expertise field.
5) To provide an emergency ambulance and contact system.

7. Outline of Methodology/Experimental Design:
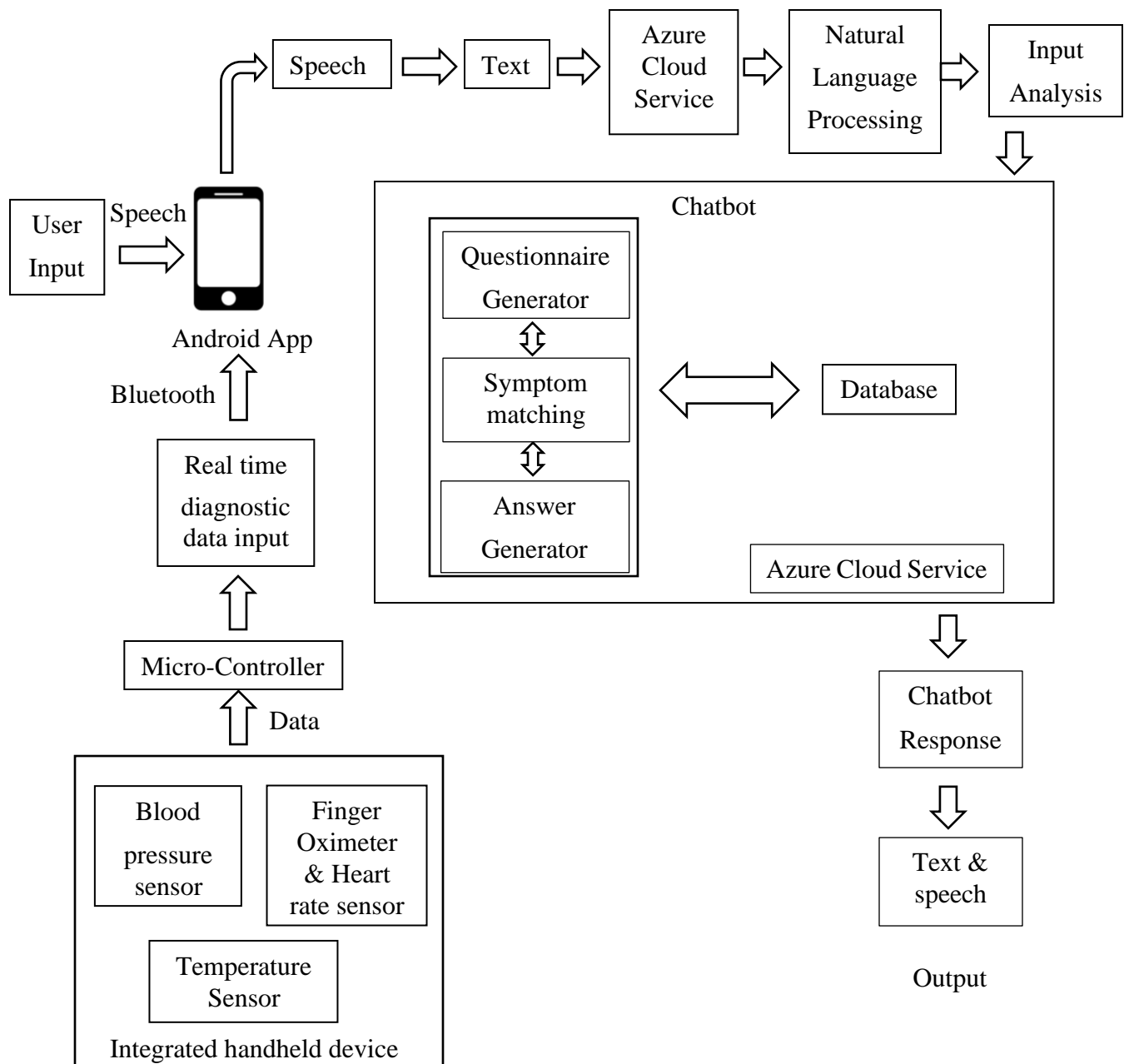
1) A mobile application will be used as user interface.
2) The application system will take manual input from the user for age, gender, weight, height, and other personal information to create a patient profile.
3) Some hardware devices will be used to measure health related metrics which will help to analyze patient's real time state:
   a) Blood pressure machine will be used to measure blood pressure.
   b) MAX30100 Finger Oximeter Heart Rate Module will be used to measure oxygen level.
   c) MLX90614 Contactless Temperature Sensor Module for Arduino will be used to measure temperature.
4) The application system will ask questions to the patient to know about the symptoms of physical illness and understand patient's voice input using Natural Language Processing.
5) Then the application system will analyze the data using Machine Learning and Data Science to predict the type of illness/disease.
6) Based on the predicted illness, the application system will suggest available primary home treatments and instructions to the patient using Data Science.
7) It will also suggest related doctors by analyzing illness and doctors' expertise field using Data Analyzing methods.
8) The whole analyzing process will be done on Azure Cloud Service. So, the app can run on any low configured mobile device.
9) There will also be an emergency ambulance and contact feature. If a specific button is pressed, an emergency message will be sent to the nearest hospital and predetermined emergency contact list automatically.

8. Please select the covered domain of your project (At least 04 or you can add any other domain(s) that is not included in the following list)

☐Algorithms	☐Information Security
☒Database and Data Mining	☐Pattern Recognition
☐Networking	☒Internet of Things (IoT)
☒Cloud Computing	☒Human Computer Interactions (HCI)
☒AI	☒App development
☐Computer Vision	☐Blockchain

☒Machine Learning	☒Data Science	
☒Natural Language Processing	☐Augmented Reality	
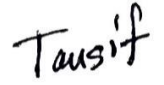
9. **Cost Estimate**:

Serial No	Items	Cost (Taka)
1	Arduino	900
2	Cloud Service Fee	Pay as you go
3	MAX30100 Finger Oximeter Heart Rate Module	400
4	MLX90614 Contactless Temperature Sensor Module for Arduino	1500
5	Blood pressure machine	2000
6	Bluetooth module for Arduino	600
7	Others	400
	Total	5800+Cloud service charge

10.   Market Analysis:

Project Name	Features							
	Illness Detection	AI Analysis	Live Video Calls or Chat	Realtime Health Data Input	Free	Suggest Treatments	Emergency Contact or Ambulance Service	Suggest Doctors
Doctime	✗	✗	✓	✗	✗	✗	✗	✓
Medscape	✗	✗	✗	✗	✓	✓	✗	✗
Arogga	✗	✗	✗	✗	✓	✗	✗	✗
Healthmug	✗	✓	✓	✗	✓	✗	✗	✓
LifePlus Bangladesh	✗	✗	✓	✗	✓	✗	✓	✗
Maya - It's ok to ask for help	✗	✗	✓	✗	✓	✗	✗	✓

Signature of the group members:

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Signature of the Course Teachers