Temporary ID: Tmp/2020/31

Sri Lanka Institute of Information Technology

Project Topic Assessment – 2020 Regular

Topic

Automated Sinhala Conversation System for Medical Domain

Abstract (200 Words Max):

Nowadays most of the Medical systems are in the English language. In our country most of the middle aged and elders cannot understand English and they do not possess user experience about Information system. Most of the medical information system are now looking forward for automated Sinhala conversation system to help the customers (patients) to make a decision on their health issues. The system has the ability to satisfy users. This document presents a survey, starting from literature survey and research problem, solution, system overview diagram, system architecture diagram and technologies. The main objective of this system is developing an automated Sinhala conversation system for medical domain and as sub objectives semantic (voice) understanding, text (voice) processing, response generation, and training data.

Keywords -: RASA, NLU, NLP, AI

Research Area/Group: Select the area by referring to the document uploaded to the Courseweb

Robotics and AI

Supervisor:

Name: Prof.Koliya Pulasinghe

Added to the Project Registration System ☑

(Signature)

Research Problem:

E channeling is available in Sri Lanka only in English Language. As many Sinhala people live in Sri Lanka, they find difficult it handling in English in E channeling. The absence of a Medical information system in the Sinhala language is a key problem identified. [1]

Many people are not aware of the drug details given to them. Normal ordinary people would find it hard to identify particular drugs prescribed to them and also Drug details appear to be in the English Language. [1]

Most people can't identify their disease because there don't have enough medical knowledge and there don't have proper ideas about how channeling doctors for their disease. [2]

There are several instances where people face unexpected accidents. Many people don't know the way of giving medical treatments for a person who had met with the accident. Nursing a person who had faced an accident cannot be totally covered by an ordinary group of people. Their medical knowledge would not be sufficient enough to do or give medical treatments to a patient. [3]

As a problem, we can say that there are some patients who know the disease they are suffering from but they do not know the way of receiving the required medical treatments for the relevant disease. [4]

The patients are not known for the specialized field of doctors. The patients will not know the details of the doctor like to which hospital the doctor comes, the time schedules of the doctors.[4]

Many Sinhala and English words are incomprehensible to doctors, patients, and nurses.[4]

These are the problems identified in the researching.

References

[1]2019. [Online]. Available: https://www.researchgate.net/publication/333524709_A_Surveyon_Evaluation_Methods_for_Chatbots [Accessed: 28- Nov- 2019].

[2] *Ir.kdu.ac.lk*, 2019. [Online]. Available: http://ir.kdu.ac.lk/bitstream/handle/345/1669/003.pdf?sequence [Accessed: 28- Nov- 2019].

[3]2019. [Online]. Available: https://www.researchgate.net/publication/333931397_Survey_on_Intelligent_Chatbots_State-of-the-Art_and_Future_Research_Directions [Accessed: 28- Nov- 2019].

[4]"Is it possible to be used in other languages?", *Rasa Community Forum*, 2019. [Online]. Available: https://forum.rasa.com/t/is-it-possible-to-be-used-in-other-languages/2560 [Accessed: 28- Nov- 2019].

Solution proposed:

There are several solutions to the problems identified in the research.

The consumers (patients) can input to the system using the Sinhala language. Here the system accepts voice and text commands, it can be given in Sinhala. Some specific times can be used the English word for the ex: drug name, doctor name, hospital name. This is because it is easier for users to enter English names into the system.

The patients would be able to help themselves by channeling their required doctor for the disease. All details of the doctor like the venue, the time and the specialized area of the doctors will be presented to the patients with the system.

The system identifies patients' problems. The consumers (patients) present their health issues to the system. As feedback or as a result they receive medical treatments for their relevant disease. The consumers only provide health issues with their ordinary basic knowledge. A problem arises when the consumer (patient) does not know to give a clear identification of the disease they are suffering to the system.

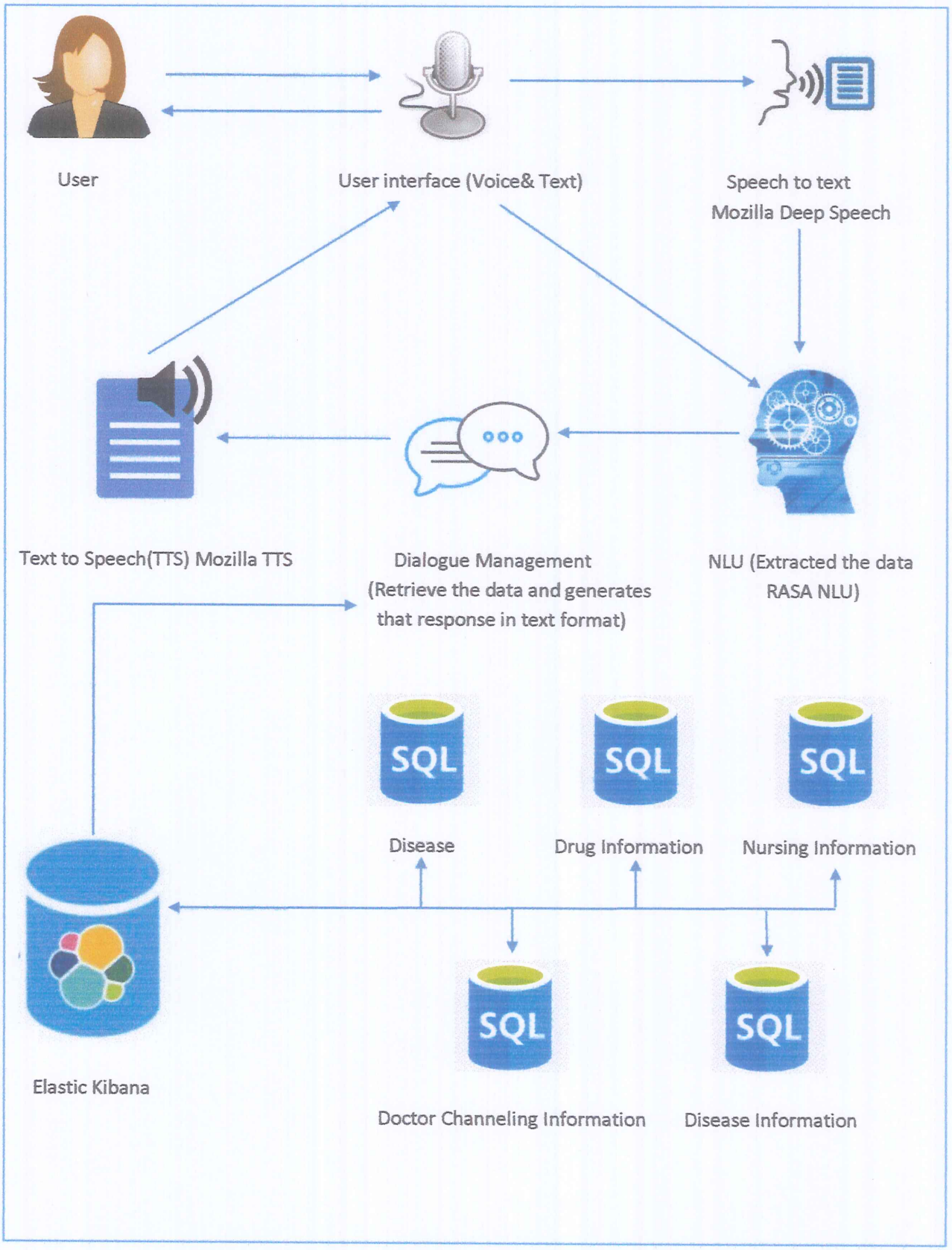
A consumer (patient) provides to the system as to what disease they are suffering. Then, as a result, the system will provide the necessary medical nursing information for their relevant disease they are suffering. When a person faces an unexpected situation or an accident this system will provide the consumers with the relevant medical nursing information to be taken along with the accident that happened.

Patients also can find the details of the drugs by entering the drug name. If a patient does not aware of the drug, what is the way that should use the drug, for which medical issue? These problems will be solved through the system.

Some foreign Doctors and foreign-educated doctors who are in Sri Lankans citizens can't understand some Sinhala terms. therefor creating translate dictionary can solve this problem.

These are proposed solutions to the research problems.

System Overview Diagram for the solution proposed (Clearly indicate the main four components of the proposal)



Objectives (1 main objective and 4 sub objectives):

Main Objective: Developing an automated system for medical domain

Sub Objective 1: Semantic (voice and text) underrating

Sub Objective 2: Text (voice and text) processing

Sub Objective 3: Response generation

Sub Objective 4: Training data

Task List divided among the members

Member 1(IT17043656)

- Convert user voice input into text message.
  Initially user will enter the voice input, system will convert into proper Sinhala sentence with Sinhala letters.
- Getting key board input (Sinhala)

Member 2(IT17255820)

- Identify what user input into the system.
  Then system will process the important facts of that Sinhala sentence. Identified facts will be search through the database.

Member 3(IT16234062)

- Develop the Sinhala Dictionary
  Train the data in Sinhala Dictionary.

Member 4(IT17029278)

- Response Generation
  Finally, relevant output will be display through the system according to the user's input.

Technologies to be used:

- RASA
- RASA-X
- Python
- RASA NLU
- NLP
- Elastic Kibana
- MySQL
- Mozilla DeepSpeech
- Mozilla TTS
- RASA Core

Team Members:

Student Name	Student ID
Leader: Rajapakshe D.D.S	IT16234062
Member 2: U.L.N.P. Uswatte	IT17029278
Member 3: Kudawithana K.N.B	IT17255820
Member 4: Nishshanka N.A.B.D	IT17043656

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Acceptable: YES/NO

Minor Corrections (if necessary)

Any other Comments:

Approved by the review panel:

Member's Name	Signature

Important:

1. According to the comments given by the panel, do the necessary modifications and get the approval by the **same panel**.
2. If the project topic is rejected, find out a new topic and inform the CDAP Group for a new topic pre-assessment.
3. A form approved by the panel must be attached to the **Project Charter Form**.