INTUITIVE CHATBOT USING OPEN AI AND RASA FOR STUDENTS

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Abstract: In today’s world, we observe that there are so many types of students. In a class of students, there is always a topper with 100% of the score and a slow learner who can’t make it to the average. Why can we always spot those differences? Why can’t all students get 100%? To all the bunch of questions out there, it is one line answer- “Students can’t clearly understand.” This paper is focussed on the design and implementation of “CLARA.” This project will analyse the student’s needs and achieve a clear and simple explanation so that the student is left with no doubt and the conversation will remain as real as possible. The AI technologies have grown a lot in recent years and there are many AI-powered products to the consumers but still, not everything that is available in the market is free or cost-effective. So our project is to create an AI assistant which is multipurpose and modular which can be made to run on any devices and also they are lightweight architecture and can be even ready to run on very low powered architectures. This can be a very cost-effective replacement for the current AI assistant that is available in the market. This kind of Artificial intelligence systems can be used to assist visually challenged humans as well as mentally challenged students. By the end of an era, this implementation would leave students with no doubt, a clear understanding thus striving towards cent percent result.

Keywords- Machine Learning, Python API, Artificial neural networks.

I.INTRODUCTION

In the advanced world where the technology is increasing at such a rapid pace, we humans are depending more on machine intelligence. Artificial intelligence and machine learning have transformed the world drastically. Who taught all this? Why is the world so smart? It is all because, someday, somewhere, a great ‘Teacher’ has spread the knowledge and the students understood it. Is everyone blessed with a ‘good teacher’? Does everyone understand what is being taught? This is where the real questions begin. To solve all these problems and give a ‘student’ the ‘best’, we have developed this project-’CLARA.’

Addressing another common world problem, Unemployment. This is the most used world nowadays. What is the real reason for unemployment? Students don’t understand the concept being taught and thus become weak when they face the competitive smart world. ‘Clara’ would solve this problem by teaching all the concept data and technology very clearly.

How will the world be if there is a teacher by the student’s side whenever he/she is in need. When a teacher is always available to clear the doubts? When the knowledge of the teacher is so vast that there is no sentence called ‘I don’t know.’ This new evolved technology development ‘Clara’ would become one of the most wanted to all the students. This would solve all the problems ranging from small problems like understanding a major problem like unemployment. ‘Clara’ would solve all the
problems easily, give the student a better understanding, teach everything that is necessary and make the student armed with knowledge and skills. That is why ‘Clara’ is called the student’s companion.

II. Module description of ‘CLARA’

The working of ‘Clara’ involves many structures and modules. The basic methodology is divided into three module structures. It is listed below:

- The vision unit
- The hearing unit
- The sensor unit

The vision unit, ‘CLARA’ has the vision ability where it can recognise the student’s movement. By the vision ability, ‘CLARA’ can identify the student’s state of mind by which the teaching technique will be adapted according to the change.

The hearing unit, by which ‘CLARA’ can hear out the student. ‘CLARA’ can hear the question and give a perfect answer to it.

The sensor unit by which ‘CLARA’ can identify the motion and movement of the student. This feature is inspired by a teacher, where the teacher pays attention to the student and explains accordingly. The I/O handlers handle all the requests from the C-Compute.

It is one of the modules which can determine whether the data is actually the voice, text or any kind of the encoded data. Output handler prepares all the text and voice needed for the output. Output handler is coded in WASM which can even handle cross coded requests.

III. ARCHITECTURE

In the computation unit, we have the following technology stacks

- The NLU
- Module loader
- Redis handler
- The database handler
- Speech handler
IV. OPERATIONAL METHOD

Clara Computation is the Brain of the project Clara, Which consists of a trained model which can handle all kinds of interrupts, Inputs and Outputs. It's a kind of Virtual router which can route the data to the system’s required module. It can handle all the data and send it to the Input handler with encoded data to the NLU and other State Handlers. Which can further make a decision to do anything it needs to do. When a sophisticated data is passed to the system the system can handle the Variated Transformer Model in C-Compute. The ‘CLARA’ can identify the natural language when used. The module loader can load all the lessons efficiently. The database handler can handle any type of data and also process it.

Redis: Like humans, the system needs a fast temporary memory hence Redis is used as the fastest memory. It is used to store the current state in the system.

MongoDB: It's used to store all the related data about the users and interactions.

NLU Engine: It's a Natural Language Understanding Unit. It gets the input from the client. Processes the input and emits two parameters, the Intent And Response. The NLU engine is processed by the RASA Foundation Open Source.

In the output section, it compromises of the following:

- The speech
- Motor control unit
- Selenium driver

The output section handles all the speech and the motor unit. If ‘CLARA’ is connected to any motor, it would automatically detect it and start working.

V. SYSTEM REQUIREMENTS

HARDWARE REQUIREMENTS

- Processor: Pentium –IV
- Speed: 1.1 Ghz
- RAM: 4GB
- Hard Disk: 20 GB
• Key Board  Standard Windows Keyboard
• Mouse     Two or Three Button Mouse
• Monitor   SVGA

SOFTWARE REQUIREMENT
• Operating System  Windows 7
• Programming Language  python
• DATABASE       Kaggle
• Tool          TensorFlow
• Framework     Anaconda

VI. PROOF OF CONCEPT

C-Compute Explanation:

Screenshot of RASA X:
VII. ADVANTAGE OVER EXISTING SYSTEMS

The existing Systems are very costly such as Github Learning Labs and Google Class is limited to some content of their products. All the systems available are not for general consumers. AR and VR based Learning is very costly tools so those are inaccessible too.

VIII. PROPOSAL

The Proposed System is AI-based Self-learning System which can answer, interact, Teach and learn together with the user. Its Brain (Clara-Compute) is made with a Variegated Transformer Architecture from Google Brains Team. Which can even adjust to the environment to create its own details about Topics. All this can provide students with an environment where students can ask, see and learn with the system. Which can also learn and improve in time. This can be applied as a Teaching Aid, In smart Boards, Smartphones and Online Web Applications.

IX. CONCLUSION

This project would help a lot of students and by the end of the decade, we could possibly beat unemployment as students/ Learners would be able to understand all the concepts of data clearly. The development in this field has started, the base artificial intelligence where the bot will be able to learn new things beyond their scope. This project would be at a greater advanced stage in the near future.

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