

Sales Assisting Robots (SAR) For Indian Supermarkets

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Abstract- With Indian super markets increasing in size and number, the need of a force to efficiently handle customers has increased. This paper gives a glimpse over the creation of an intelligent machine called Sales Assisting Robot (SAR) that can reduce most of the human inefficiencies in Sales. It also focuses on the advantage of having a SAR in Indian super markets along with the challenges that needs to be overcome in the process of implementing it.

Keywords- Sales Assisting Robots, SAR, Indian super markets, Artificial intelligence, IoT

I. INTRODUCTION

The soul of any business success lies in its marketing. Most aspects of your business depend on successful marketing. The overall marketing umbrella covers advertising, public relations, promotions and sales. There is a need for enormous workforce in the current growing Indian supermarkets and this can be reduced by utilizing the advancement in the field of technology and data available in internet. But with India being multilingual country, building any kind of AI machine to effectively handle different kinds of people will be a challenging task. Also, the cost of the technology can hinder its expansion in the country.

II. SALES ASSISTED ROBOTS

Most of the human inefficiencies in Sales can be reduced with the creation of an affordable intelligent machine called Sales Assisting Robot (SAR) by incorporating the advancement in the field of Artificial intelligence and Internet of Things (IoT). The SAR can effectively and efficiently communicate with the customers by attempting to understand their areas of interest and then offer most suitable product available to them. Through the integration of Internet into its process, SAR tries to leverage the data available in web to satisfy its customer to their maximum extent.

SAR uses the functionality of Natural language processing to understand the needs of customer and comparing with products available in the store, suggests the best available product that can satisfy the customer to their maximum extent.

The customer details and the history of conversation is also stored for further conversation with customer, also it uses the data available in internet to understand the customers' interest, thus allowing to make better real-time decision. The block diagram of proposed model of sales Assisted Robot is shown in the figure – 1 and it contains the following functional blocks.

a. Input devices

As the SAR model aims to interact with customers in real-time, there is a need for audio input which can be supplied by MIC. Also, the system needs to be activated or deactivated on any movement of customer towards or near the Store/AI system in case of stationary robots. The specification of input devices that needs to take into consideration during selection is the coverage distance.

b. Audio to text converter

The inputs obtained from the input devices needs to be converted to text format before the information extraction process can begin. There are various tools available in market for audio to text conversion. One thing to note during the selection of audio to text convertor are conversion time and response time as this model needs to operate in real time.

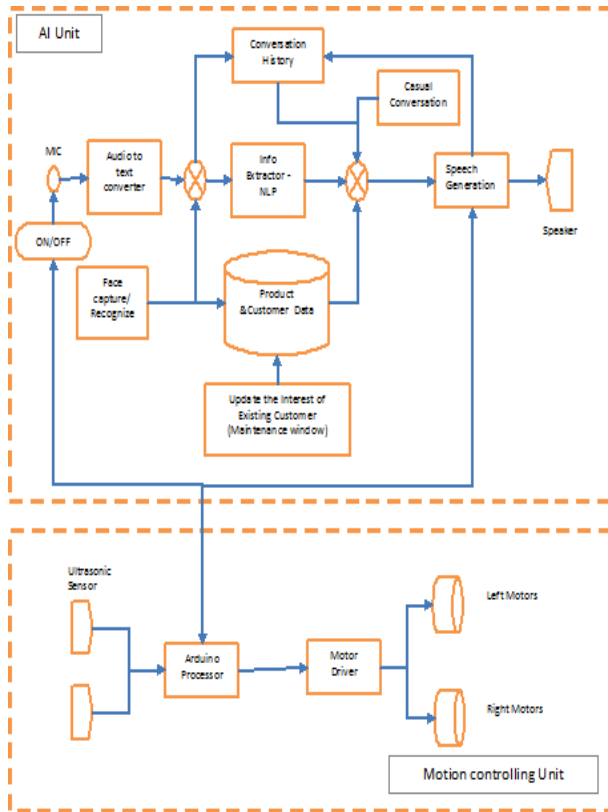


Figure 1: Block diagram of Sales Assisting Robots (SAR)

c. Information extractor

By combining the power of artificial intelligence, computational linguistics and computer science, Natural Language Processing (NLP) helps machines “read” text by simulating the human ability to understand language. We can use the powerful programming languages toolkit such as OpenNLP in JAVA or NLTK in Python[2] to serve this purpose. Information overload is a real problem when we need to access a specific, important piece of information from a huge knowledge base.

Automatic summarization is relevant not only for summarizing the meaning of documents and information, but also for understand the emotional meanings inside the information, such as in collecting data from social media. Automatic summarization is especially relevant when used to provide an overview of a news item or blog posts, while avoiding redundancy from multiple sources and maximizing the diversity of content obtained. The text received from the audio to text convertor is directly given to the Information extraction model built on the Python/Java platform.

d. Decision Making Stage:

This component is the heart of this complete model since this is where the information collected are consolidated and suitable decision needs to be taken on what product or service that should be offered to the current customer. The stage requires the following data to induce an appropriate decision that flows into the speech generation unit to get converted into human understand language.[1]

e. Data Storage

Data will be very critical aspect in these process which involves customer details, product specifications available in the store, customer conversation history etc. The requirement of storage required for these growing data is also very critical. A central data hub needs to be established in order to communicate and maintain sync in all the outlets of SAR in a store.

f. Text-to-Speech

Text-to-Speech (TTS) refers to the ability of computers to read text aloud. A TTS Engine converts written text to a phonemic representation, then converts the phonemic representation to waveforms that can be output as sound. TTS engines with different languages, dialects and specialized vocabularies are available through third-party publishers. There are various tools/softwares available in market to achieve this stage. Since complete dialog to spoken is generated in decision making stage itself.

g. Output devices

The output devices that are required for this model are speaker to deliver the output of Text-to-Speech converter. Also in case, any demos for products needs to be shown to customer during the interaction, we can make use of a monitor screen.

h. Motion Controlling Unit

This is the unit that will work in reverse mechanism of object avoider unit. It consists of ultrasonic detector that detects object and moves towards it. One main constraints that exists in this model is that the unit starts moving towards every object.

So, we need to program the model to differentiate between normal object and the human beings[3], thus activating the whole device only when human is detected and moves towards it.

III. ADVANTAGES OF SAR

Sales Assisting Robots will be advantageous in the supermarkets where area of coverage is vast where it would be difficult for humans to handle all the customers. The following are some of the advantages of SAR.

a. Improve Sales

Since SAR integrated with internet data and tries to understand the exact customer demands and provide the suitable solutions to that, it will improve the sales of store.

b. Customer help

By gathering the customer details at the end of conversation, SAR can also be connected to customer help line, where it can recognize the customer and provide any other helps required.

c. Theft control

SAR can also advance to provide the Theft alerts if case of any suspects.

IV. CHALLENGES IN IMPLEMENTATION

Few of the challenges that needs to be encountered during the implementation of SAR are as follows.

a. Lingual Diversity in India

With India being a multi-lingual country, there will be a challenge in handling people with different language and their accents.

b. Response time

Having lower response time of the machine can be a challenge to the design due to its heavy processing.

V. CONCLUSION

The robots in the field of marketing is always a fascinating idea. The Sales Assisting Robots can make that idea a reality. Through which Business can leap towards future of sales. With making use of affordable and available components around us, we can take sales to the next level. As history tells us, the more you know about the person you're selling to and the more you're able to tailor your offer to his or her circumstances, the higher likelihood of sales success. This is not rocket science.

REFERENCES

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