

Nia – Semi-Automated Intent Based Enterprise Chatbot

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Abstract:- Enterprise chatbot is the current technological trend that most of the companies are drifting towards it. Chatbot will act as the conversational interface between the customers and service providers which makes customers talk in normal natural language and get the task done in very less time. Enterprise bots help companies increase their productivity and efficiency. The project first phase included the background discovery of AI development platforms and deployment channels that helps companies develop in-house chatbots to help their employees and customers, also the study on how to develop a On-premise chatbot that can talk to company's internal systems through REST api's, Chatbot is the part of ChatOps concept which will extend the user a delightful UI experience.

I. INTRODUCTION ENTERPRISE PRODUCTIVITY BOTS

What is artificial intelligence? The theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages. Background survey of chatbots Artificial Intelligence is a way of making a computer, a computer-controlled robot, or a software think intelligently, in the similar manner the intelligent humans think. AI is accomplished by studying how human brain thinks, and how humans learn, decide, and work while trying to solve a problem, and then using the outcomes of this study as a basis of developing intelligent software and systems. A chatbot is a computer program which conducts a conversation via auditory or textual methods. Such programs are often designed to convincingly simulate how a human would behave as a conversational partner, thereby passing the Turing test. Chatbots are typically used in dialog systems for various practical purposes including customer service or information acquisition. Some chatterbots use sophisticated natural language processing systems, but many simpler systems scan for keywords within the input, then pull a reply with the most matching keywords, or the most similar wording pattern, from a database. One pertinent field of AI research is natural language processing. Usually, weak AI fields employ specialized software or programming languages created specifically for the narrow function required. For example, A.L.I.C.E. utilizes a markup language called AIML, which is specific to its function as a conversational agent and has since been adopted by various other developers of, so called, Alice bots. Nevertheless, A.L.I.C.E. is still purely based on pattern matching techniques without any reasoning capabilities, the same technique ELIZA was using back in 1966. This is not

strong AI, which would require sapience and logical reasoning abilities. Jabber wacky learns new responses and context based on real-time user interactions, rather than being driven from a static database. Some more recent chatbots also combine real-time learning with evolutionary algorithms that optimize their ability to communicate based on each conversation held, with one notable. Enterprise productivity bots as the adoption of voice and messaging technologies continue to grow in the enterprise, so does the potential for chatbot solutions. However, to be adopted in the enterprise, chatbot platforms will need to provide capabilities in areas such as integration, security, management, or monitoring, which are essential elements of enterprise solutions. Specifically, enterprise-ready chatbot platforms should include some of the following capabilities:

- Integration with messaging platforms
- Natural language learning systems
- Chatbot store
- Monitoring
- Integration with enterprise systems
- Testing
- Security

II. LITERATURE SURVEY

A chatbot is a computer program which conducts a conversation via auditory or textual methods. Such programs are often designed to convincingly simulate how a human would behave as a conversational partner, thereby passing the Turing test.

Chatbots are a service powered by rules and some AI that you interact via a chat interface.

A. Chatbots available in the market and their example:

- Enterprise bots. Ex: IBM, HP, NetApp Elio
- Weather bot. Get the weather whenever you ask Ex: google assistant
- Grocery bot. Help me pick out and order groceries for the week.
- News bot. Ask it to tell you whenever something interesting happens: CNN
- Life advice bot. I'll tell it my problems and it helps me think of solutions. Ex: apple Siri
- Personal finance bot. It helps me manage my money better. Ex: Cleao

Scheduling bot. Get me a meeting with someone on the Messenger team at Facebook. Ex Siri

B. Types of AI assistants

A.I assistants are classified into two types:

- Rules based
- A.I based'

| Platform documentation | Service to build bots |
|------------------------|-----------------------|
| FB messenger | Octane.ai |
| Discord | Wit.ai |
| Slack | IBM Watson |
| Kik | Google Dialogue flow |
| Telegram | Amazon Alexa and Lex |

Table 1: Platform and services to build a chatbot

C. Architecture of chatbots Goals of AI

- To Create Expert Systems – The systems which exhibit intelligent behavior, learn, demonstrate, explain, and advice its users.
- To Implement Human Intelligence in Machines – Creating systems that understand, think, learn, and behave like human

III. HARDWARE AND SOFTWARE REQUIREMENTS

A. Software requirements

- JavaScript and Coffee Script
- Familiar with NodeJS
- Familiar with API's which are required
- Familiar with google or amazon's bot development platforms and train them.
- Google's Api.ai for NLP and ML techniques
- GitHub's open source platform called as Hubot for the bot development.

B. Hardware requirements

- Linux machine – ubuntu or red hat
- Windows 8 and above.

IV. SYSTEM DESIGN DETAILS

The figure describes how I achieved ChatOps by using GitHub Hubot into company's internal product. To define service level managers according to wiki "Service Level Management (SLM) aims to negotiate Service Level Agreements with the customers and to design services in accordance with the agreed service level targets. This ITIL process is also responsible for ensuring that all Operational Level Agreements and Underpinning Contracts are

appropriate, and to monitor and report on service levels." So, it acts as an interface to company's data and customers.

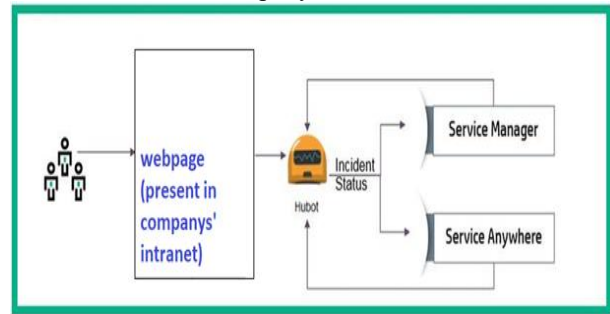


Fig. 1:- Brief workflow of chatbot interacting with SLM

The workflow of the chatbot interaction with api's is as given below:

- Employee interacts with the chatbot to get or put something on to the storage or from the storage
- The chatbots does the NLP and marks the intents and calls the respective REST api's by GET or POST
- The answer is fetched from the storage system from the api's and given back to the employs as the response

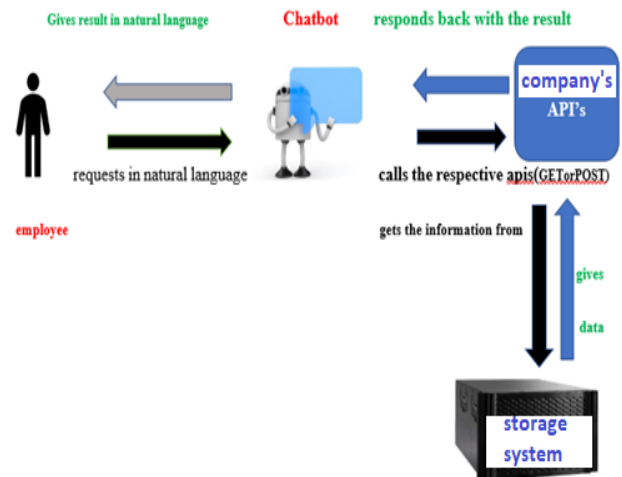


Fig. 2:- Detailed flow diagram of the messages and responses using REST api's.

V. IMPLEMENTATION DETAILS OF THE PROJECT

The below flowchart gives us the detailed workflow on how intent based chatbot works in intranet. The user enters the query and the query is parsed into words to understand what user meant, this is done by a pre-trained model in Google api.ai it helps the model to identify the intent prior to this the intent and entities must be created in the api.ai project. Once the user intent is identified the required mandatory entities for file share api (POST) call is asked to the user and parameters are extracted. These entities are then embedded into the required parameters list in the body of api POST call, upon successful creation of file share the job URL is given back to the user to track his file share in future. In case if the query asked by the user doesn't match any intents it is redirected to the default intent.

VI. CONCLUSION

The enterprise productivity chatbots not only enhances the company’s business but also eliminates the tedious jobs that employees do to complete a task. Intranet chatbots has advantage of becoming an employee assistant chatbots as it can be under a secured network of the company. Chatbots which are intent based are easy to develop and train. By all the above-mentioned advantages intent based intranet enterprise chatbots are of greater ease to use and saves a lot of money and time to the company.

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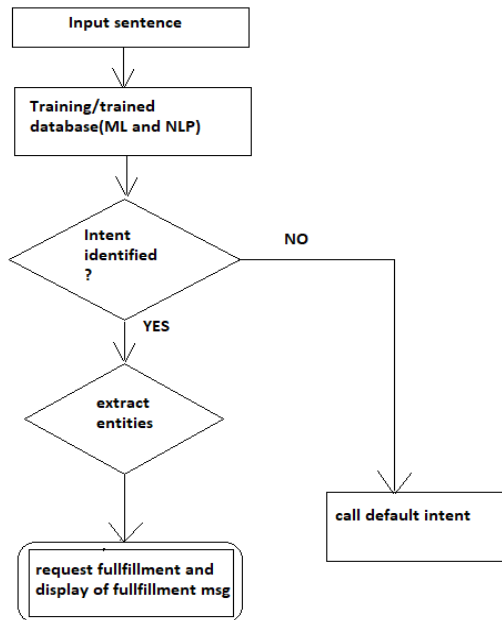


Fig.3:- flow chat of the intent-based enterprise intranet chatbot.

Fig 4 is a screen shot of the chatbot Nia that is developed as the intranet chatbot which is intent based for its NLP capabilities, Nia helps its customers to gets things done by them selves without the old tedious methods for ex: if a customer needs a storage space to save his file he had to first have knowledge of REST api’s and its usage but Nia is trained in such a way that it learns everything that customers were asked to learn before and help them achieve it by just asking the chatbot in usual English, Nia understands based of the training data set and intents and completes the required need, more efficiently and quickly with a attractive interface and conversation which doesn’t seem that customers a actually talking to a chatbot.

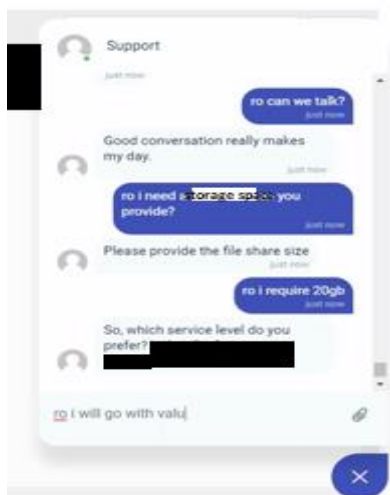


Fig. 4:- the screen shot of a the chatbot Nia used to help customers do complex work by just conversing with it.