AI ENBALED PERSONAL ASSISTANT SYSTEM USING IBM WATSON

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I. ABSTRACT:

ABSTRACT: Personal Digital Assistant (PDA) i.e. a handheld device interacting with human beings verbally and performing tasks that are usually performed by an assistant, has been a growing and continuously evolving technology in recent years. Technology is rapidly automating all the manual work. In such scenario, the concept of PDA where everyone can carry their very own assistant in their pockets and can use it anytime and anywhere without even having to reach their pockets (i.e. completely hands-free usage) proves out to be a great success for technological world. There is no doubt about the fact that PDAs are the future of technology as all the major tech giants like Google, Microsoft, Apple etc. are keen on building and developing their own PDA. Thus, this advancement, demands for a reliable verbal authentication measure where a user can authenticate himself just by talking to the system. Moreover, this conversation should be such that, no intruder or attacker must be allowed to bypass the system even if he listens to the conversation that took place between the user and the PDA. This paper focuses on the security mechanisms that can be used to develop a base for verbal authentication and how it can be used as a powerful tool for validating login for device.

KEYWORDS- AI, MACHINE LEARNING, DEEP LEARNING, FEATURE EXTRACTION, PATTERN RECOGNITION, IBM WATSON

II. INTRODUCTION

A. Machine Learning

A branch of artificial intelligence, concerned with the design and development of algorithms that allow computers to evolve behaviors based on empirical data.
As intelligence requires knowledge, it is necessary for the computers to acquire knowledge. Training is the process of making the system able to learn.

B. Supervised Learning

Supervised learning as the name indicates a presence of supervisor as teacher. Basically supervised learning is a learning in which we teach or train the machine using data which is well labeled that means some data is already tagged with correct answer. After that, machine is provided with new set of examples (data) so that supervised learning algorithm analyses the training data (set of training examples) and produces an correct outcome from labeled data. some set of input values to produce their respective output values. The function is formed by composing many simpler functions. New
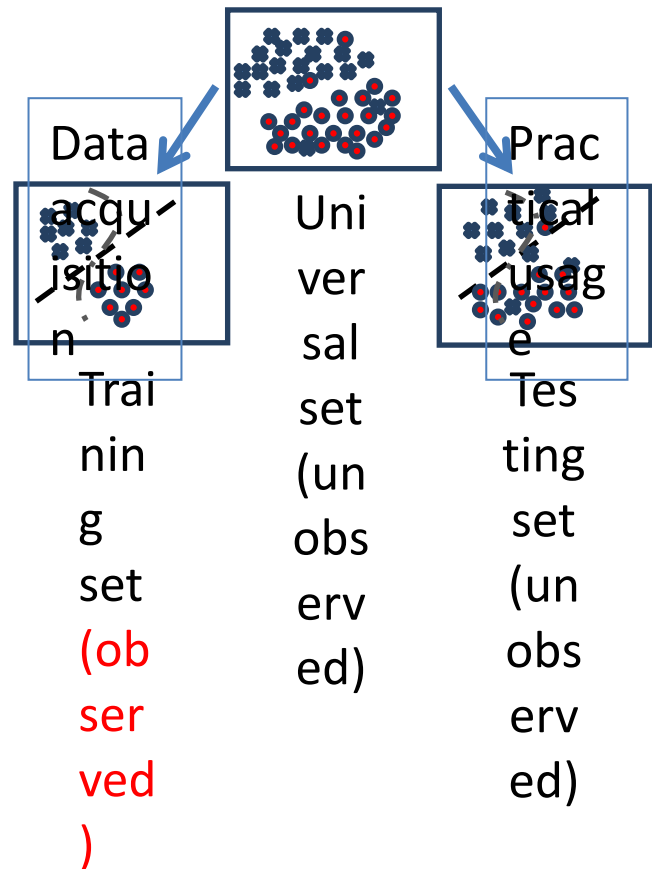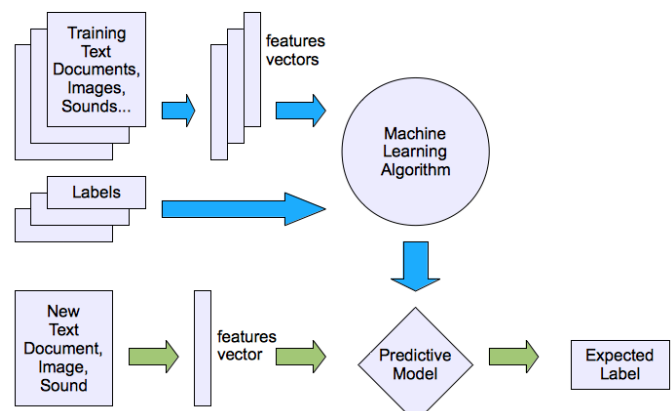

Fig:1.1 Training and Testing

Fig:1.2Supervised Learning

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B. Unsupervised Learning

Unsupervised learning is the training of an artificial intelligence (AI) algorithm using information that is neither classified nor labeled and allowing the algorithm to act on that information without guidance.

In unsupervised learning, an AI system may group unsorted information according to similarities and differences even though there are no categories provided. AI systems capable of unsupervised learning are often associated with generative learning models, although they may also use a retrieval-based approach (which is most often associated with supervised learning). Chatbots, self-driving cars, facial recognition programs, expert systems and robots are among the systems that may use either supervised or unsupervised learning approaches.
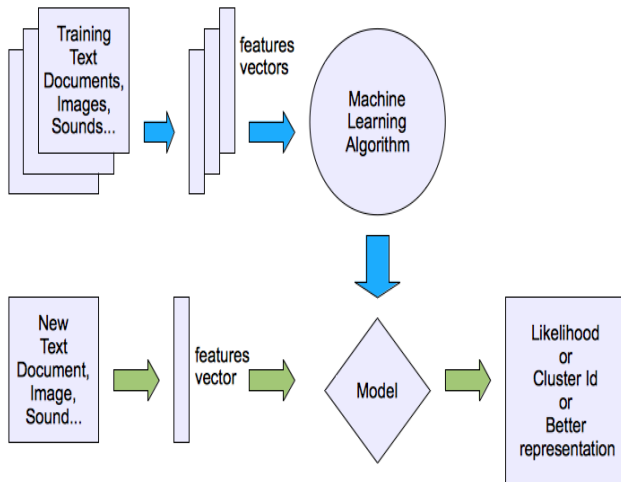
Fig:1.2Unsupervised Learning

III. EXISTING SYSTEM

Our common understanding of a personal assistant is that of a person (or an agent) who is able to provide distinct help at a given time and in a given activity context. For example, a secretary situated in a general work context provides support for activities such as answering incoming calls, recording meetings and appointments, ordering products, or interacting with clients. An important characteristic of personal assistants is that they adapt to the distinct demands of their 'master' and furthermore (over time) progressively pay attention to her/his personal preferences and routines. Also, as by their definition, personal assistants should each be helping only one person, making this one-to-one relationship between assistant and 'master' a crucial benefit. Given this definition of a personal assistant it is easy to argue that many people would find it convenient to have such a person at their disposal, even though not all of them may have a clear understanding of their exact context of use. Hence, when we try to approach this subject from a more technical perspective, we already find a set of requirements and expectations coming from users. Among the most requested features when thinking of digital assistants, are simplicity, flexibility and easiness of interaction. Voice-based input/output interfaces may be the easiest way to fulfill these requirements. Using signed credentials eliminates the need for reputation queries but ensuring validity of trust information in credentials is a problem. If a peer misbehaves after collecting good credentials, it is hard to revoke credentials without using a central authority. Furthermore, a public-key infrastructure is generally needed

IV. PROPOSED SYSTEM

We propose a Self-Organizing Trust model (SORT) that aims to decrease malicious activity in a P2P system by establishing trust relations among peers in their proximity. No a priori information or a trusted peer is used to leverage trust establishment. Peers do not try to collect trust information from all peers. Each peerdevelops its own local view of trust about the peers interacted in the past. In this way, good peers form dynamic trust groups in their proximity and can isolate malicious peers. In SORT, peers are assumed to be strangers to each other at the beginning. A peer becomes an acquaintance of another peerafter providing a service. Using a service of a peer is an interaction, which is evaluated based on weight (importance) and recentness of the interaction, and satisfaction of the requester. A peer may be a good service provider but a bad recommender or vice versa. Thus, SORT considers providing services and giving recommendations as different task and defines two contexts of trust: service and recommendation contexts. Information about past interactions and recommendations are stored in separate histories to assess competence and integrity of acquaintances in these contexts.

Software architecture must describe its group of components, their connections, interactions among them and deployment configuration of all components. A software architecture can be defined in many ways − UML (Unified Modeling Language) − UML is one of object-oriented solutions used in software modeling and design.

In this architecture the most powerful machine learning algorithms are used with deep learning techniques. The technique also involves the multiple types of back propagations and feed forward networks.
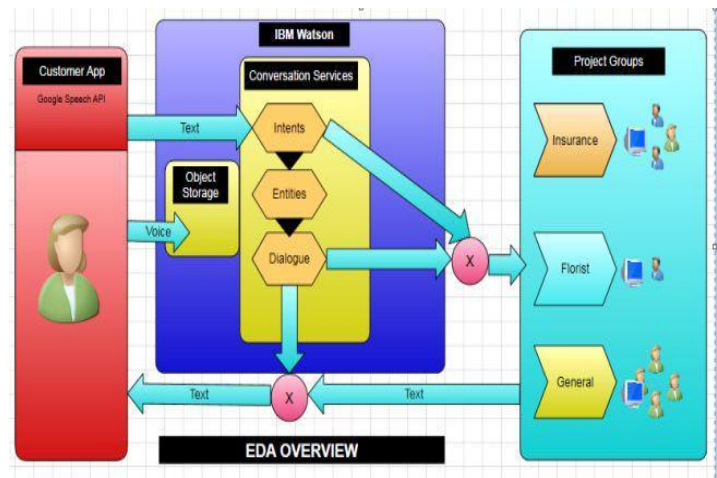
AGENT MODULE

An agent is person who is assigned to handle a particular task based on the project group (i.e Floral, Insurance, Tax, etc) in which he belongs to. Here I have listed down the available features in POC,
Thread Management Panel : Thread is nothing but chat which agent is handling if they are logged in. When user signed into app and starts the conversation, based on the conversation the particular chat will be transferred to agent.
Example:
- If the user starts the conversation with Floral request, then it will be transferred to floral page
- If the user doesn't belongs to any project group then the chat will be transferred to general agent

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Each agent can handle up to five conversations. It can be increased in production based on the client request. Agent can get new message count in thread list.

Chat Panel : The chat panel helps agent to view the different information received from user in both Text **and Voice.**
Agent can respond only through text and based on the user request agent can transmit Files (PDF/DOC/EXCEL/HTML)/Images/Links/Videos/Audios through upload
files option. Agent can get a desktop notification when new message comes from client.

Thread Routing: Thread routing is one of the important options in EDA. It helps agent to transfer the chat if that is not appropriate for them based on the project group they are assigned with.As of now, the system is designed to route the thread based on the project group and available agent ID**.** Thread Routing is possible through "Transfer Chat" option in Dispose Panel
Dispose Chat Panel: Dispose Chat helps agent to close the conversation between agent and user with proper disposition.
Once the chat is disposed "**This session has been closed"message** will be sent to user to indicate the end of conversation.
Add Contact: Add contact allows agent to add the contact information to users contact list which is synchronized with user's mobile contact.
Compose SMS: Compose SMS allows agent to send a SMS to one or more recipients based on the user request and the SMS will be sent through user's carrier.User have option to synchronize their mobile contact will be displayed in recipients list for ease (Only the name will be displayed, agent cannot get hold of the number).Agents have the option to type External mobile number to send SMS.
Compose Email: Compose Email allows agent to send a Mail to one or more recipients based on the user request and the Email will be sent through EDA's default mail server. User can either ask agent to "**Send directly"without** confirmation or he can initiate the mail by getting the confirmation in user app. When user synchronizes their contact information, related mail ids will be synced automatically and will be listed for ease. Agents have the option to type External Email ID to send Email.
Create Notes: Create Notes option helps agent to create notes and the same will be listed in the user's app under "**Notes"**Menu.
Example: User can send an audio message of his meeting to agent and ask them to prepare MOM that will be automatically synced with Notes menu in app.
Create Appointment:EDA has flexibility of creating appointment based on user request. The appointment will be automatically scheduled and updated in the calendar application which ever available in the user's phone.
Get General Details:
Get Appointment: EDA has flexibility of get appointment based on user request on a particular day**.**
News API : EDA has flexibility of get top news based on user request
Weather API: This API used to get a current weather condition for a particular city based on user request.
Get Expense: This option used to get expense details of user based on date selection.
Expense Manager: EDA has flexibility of creating Expense based on user's request. It has Update and View expense functionality. We can view user's expense as graph, table.
Floral/Insurance: These are project group; indicate which group agent belongs to Any number of project group can be created based on the use of EDA.
Doctor portal: This option helps agent to get report of patient and send report to user. Report format will be image.

Pause/Resume: This option helps agent to break from session. During the pause, agent will not assign any chat from user. Resume helps to resume their conversation.
Logout: Agent can logout from their session using logout option provided all the threads related to agent is disposed.

5.4.2 USER MODULE
End-user who is willing to ask for help through mobile application. Here I have listed down the features which have been implemented for POC,
Registration: It helps used to create new account in EDA to use the service. The following information is captured during the registration
- Firstname
- Lastname
- Email ID
- Password/Confirm Password
- Mobile Number
- Country
Upon success registration, the screen will redirect to OTP verification screen, The OTP will be emailed to registered email id.
OTP Verification: Upon receiving the OTP through mail, the verification will be done and redirected to introduction Screen
Introduction Screen: Introduction includes the slideshow which explains the app functionalities. Note: There won't be any skip option in introductory screen as client want everyone to go through the working in this stage. After the introduction screen, app related permission will be asked and redirected to main screen
Sign In: User can use sign in option if they have account in EDA. If the user doesn't enable all the permission during registration, it will be asked once he is logged in.
Forget password: If user forgets their password during EDA login, they can ask new password for login and can get it from their Email id.
Tabs: User can create tabs up to 5 in which they ask questions to agent. They will be responded by AI or Agent.By pressing top of the tab, user can close the chat by using close task **Messaging.** User can use either Text/Voice to send their queries to agent/AI.

Attachments: It helps user to send / share any type of images/ documents (TXT, PDF, DOC, DOCX, EXCEL, HTML, ETC..)/ Video/ Audio.Also enable to take photo/record Video through app via in built application**.** Showing Alert message when user cross the total file size limits (500 MB).
Yes/No Button: This button is enable user to respond to the question by pressing the buttons to make user experience the ease.
Profile: The information which given during the registration will be stored in profile screen. Using edit option they can edit their information and they can also have change password option.
Notes: User can view the notes which will be added when agent to add the notes requested.
Synchronize Contacts (Email/Phone Number): This option helps users to sync the contact information with agent app. Only the name in which the details are saved will be displayed
About: The version of the app will be displayed
Minimize: This option helps you to minimize the app
Logout: Option helps user to logout from EDA APP

Crashlytics - crash analytics tool: Eda has flexibility to analyzing crashes on Eda APP. Crashlytics provides deep and actionable reports for the app crash.

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V. CONCLUSION

EDA which is a personal digital assistant in almost every Apple product. We concluded that, EDA (speech-recognition) is personal assistant that's built into all EDA smart-phones. The software isn't an "app" in the EDA sense, meaning it's not something you can download from the App Store. Currently EDA is the name for an ultimately different and new path of handling Apple Phone. EDA is a speech-recognition computer application. It has both speech input and output, meaning you can speak to it, and it can speak back to you.Also, in future following enhancements will be done in EDA:

EDA standalone speaker will be launched by Apple soon that will help Apple better compete against the likes of Google Home and Amazon Echo.

An enhanced version of EDA will be introduced in Apple's models.EDA will update EDA voices for more clear, human voices and language translation, and additional third-party actions with the upcoming release of IOS EDA is introducing an upgraded user interface, with a "more natural and expressive" voice.

EDA will also take note of the activity across the OS, displaying things of interest in news, providing a location for an appointment or assisting in making a calendar appointment.

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VI. BIOGRAPHIES

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