Implementing voice recognition and natural language processing in Salesforce

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Abstract: Artificial intelligence (AI) has grown in popularity in recent years, allowing it to evolve into a more effective tool. Customer relationship management is one of the most significant sectors that employs this cutting-edge technology, and its use is growing all the time. Companies that accept the potential of AI will be able to give contemporary experiences that their customers desire, such as communicating with them across all of their components, analyzing their information in order in order to comprehend them, and predicting and forecasting their requirements. Salesforce Einstein is the industry's first one-stop AI for CRM solution, designed to help any organization become smarter and more predictive about its customers. AI, deep learning, predictive analytics, natural language processing, and data mining power Einstein. Einstein Language recognizes the customer's sentiment automatically, allowing you to prepare their strategy and navigate conversations more effectively. For example, if the program detects phrases that reflect positive feelings such as joyful, eager, or ecstatic, it deduces that the consumer is very satisfied with what you are selling. Salesforce's Einstein Voice is an autonomous voice recognition program. This application may be used to acquire rapid updates during meetings and to notify customers of any new updates. It can also gather notes and pertinent contact data in real-time and quickly convert it from text to sound for your business. You can also use Einstein Voice with Alexa or Siri to quickly brief your staff.

Keywords: SalesForce, CRM, NLP, Speech Recognition, Artificial intelligence

I. INTRODUCTION

Artificial intelligence (AI) is changing how organizations communicate with their partners and customers. AI is already an inevitable part of our lives, allowing businesses to quickly adopt AI to boost their brand's reputation and increase consumer loyalty.

Small, medium, and large organizations, regardless of industry, seek to reap the benefits of AI. According to Gartner, firms concerned with AI and Predictive Analytics are particularly interested in Sales, Marketing, Customer Experience, and Digital Commerce.

Salesforce, with 19.5% of the Customer Relation Management (CRM) Vendors Market, was one of the first to adopt AI capabilities and technologies. Furthermore, it was one of the first CRM service providers to develop its own AI tool, Salesforce Einstein, in September 2016 and has since continued to enhance its capabilities across multiple Salesforce products.

Organizations of all sizes, from tiny businesses to multinational corporations, can benefit from CRM system adoption by having customer support employees provide better and faster client service provided they have easy access to customer information such as earlier purchases and previous interactions. Improving organizations through the use of reporting and visualization tools to uncover trends and insights about their customers through the collection and access to customer data, as well as the automation of repetitive but necessary customer service and sales channel chores [1].

1.1 Automation in Salesforce

Salesforce automation systems manage customer contacts and automated various sales cycle processes necessary for pursuing upon inquiries, recruiting new customers, and cultivating a loyal customer base.

Salesforce.com's Einstein AI platform connects the various information sources utilized by salespeople, allowing data to be centralized. This enhances salespeople's ability to find and nurture more leads, close more transactions through personalization, and optimize ROI. AI may potentially analyze information in real-time and provide customized suggestions to salespeople in real-time. For example, TalkIQ may analyze phone conversations between sales reps, customers, and prospects. It emphasizes significant differences in strategies that have a direct influence on sales outcomes and assesses the efficacy of marketing techniques on key indicators of performance. People.ai may give better insight into sales teams' efforts and productivity, and it may even provide early warnings about stopped deals and coordinate activities to increase closing rates[2]. None of the following values are easily reached using typical Salesforce Automates (SFA) methods.

Natural language processing (NLP) can be used by AI to analyses human conversation and emotion in real time [3]. This advancement may allow salespeople and marketers to obtain a better understanding of their consumers and prospects while talking with them, resulting in greater engagement. Based on algorithms, machines may self-improve and boost their prediction skills in the long term that learn by themselves and freshly information gathered, often without the intervention of humans [4].

1.2 Salesforce AI solutions

Cloud computing applications CRM, also known as SaaS (software as a service) or on-demand CRM, stores data on a distant network that employees may access from any place with an internet connection at any time. Installation and maintenance may be handled by a third-party service provider. Companies with little technological resources or understanding are drawn to the cloud's quick and easy deployment options. Because the organization does not physically oversee the collection and maintenance of its information, security of data is a major issue for businesses that use cloud-based solutions. If a provider of cloud services ceases operations or is acquired by another firm, an organization's data may be threatened or deleted. Compatibility concerns may develop when data is first transferred to the cloud through an organization's internal structure[5].

Salesforce Einstein merges AI technology with Salesforce's SaaS CRM. It leverages data collected on every user activity to give predictive analytics, NLP, and machine learning to Salesforce clients. Salesforce Einstein can use its massive user base by studying every action made to increase its capabilities, providing customers with more accurate insight as it grows[6].

1.2.1 Einstein Language

Einstein Language is a NLP system that use AI to analyze customer interactions and provide customised experiences. By acquiring an in-depth understanding of emotion and intents from customer interactions, this Salesforce-AI solution employs NLP to provide customised replies and boost customer engagement.

Salesforce Einstein intent is a Salesforce Einstein NLP feature that assists enterprises in gaining a clear understanding of client interactions. It analyzes and categorizes customer enquiries such as emails, chat messages, and voice recordings. Businesses can simply deliver personalized responses to fulfil consumers' requirements and preferences when the intention behind the customer engagement is correctly perceived[7].

Salesforce Research has made critical advances in deep learning and NLP during the last year to address these challenges. To fully leverage the quantity of data now accessible and increase the accuracy of algorithms for each specific NLP job, they developed quicker, more adaptable modeling architectures, a reinforcement learning tool that develops new neural network topologies, and improved training methodologies. Natural language understanding is one of the most difficult tasks in AI research since it requires a coherent strategy that addresses all of these factor[8].

During the last year, Salesforce Technology has made significant progress in deep learning and NLP to address these issues. They developed quicker, more scalable modeling designs, a reinforcement learning agent which designs novel neural network topologies and enhanced training methods with the goal to fully use the huge amount of data presently available and improve model accuracy for every single NLP task[7].

1.2.2 Einstein Voice

Salesforce Einstein Voice, an AI-powered voice assistant, enables sales people to update Salesforce data using voice commands, boosting efficiency and productivity. Einstein Voice links to Siri, Google, or Alexa to provide daily briefings to your sales representatives. They can obtain a fast snapshot of their daily agenda, as well as notifications of new information for at-risk customers who should be contacted. We can also use your mobile device to update contact data or take notes, and Einstein Voice will offer next steps depending on the information you supply. It uses your CRM data to provide context for your text-to-speech system [9].

Speech recognition is changing the way people interact with smart devices. For each aspect of speech, including pronunciation, acoustics, and language, conventional phonetic-based recognition systems require training different models, each with a unique set of training objectives. As a result, improving systems for voice recognition is difficult since updating a single feature does not necessarily result in improved overall performance. Itdescribes a unique method based on complete models that train all speech components simultaneously with a single aim. This, however, has a unique set of challenges. For starters, there might be millions of training parameters, resulting in over-fitting. Second, due to optimization constraints, training goals and testing measures are frequently different, which might result in worse models. They address these issues by increasing the model's regularization during training and optimizing the performance metric via policy learning. Both techniques are extremely effective and considerably increase the effectiveness of the end-to-end speech model[10].

II. METHODOLOGY

Method of investigation the research is carried out in the form of a literature review. The following search terms are used to obtain literature from the IEEE, Google scholar, Xplore digital library, and Scopus.

- Research Method no 1: "AI" OR Artificial Intelligence AND "CRM" OR Customer Relationship Management AND Salesforce
- Research method 2: AI OR "Artificial Intelligence" AND CRM "Customer Relationship Management" AND Salesforce One of the key examples given in this article is Salesforce's AI, Einstein, which is an AI built into their platform that allows for the diverse usage of AI technologies in many sectors of Salesforce.
- Research method 3: "Implementation AI CRM" in "Salesforce" and " implementation of Speech in Salesforce" and "natural language processing in Salesforce"

Although there have been few research on the subject, the major sources for this subject will be Salesforce's websites and sites to which they refer; however, source review will be used.

III. RESULTS AND DISCUSSION

3.1 Salesforce Tools with ML and NLP

Salesforce identifies the five primary NLP and machine learning tools that it employs[11]:

1. Einstein's Discoveries-:

With the use of customer data, this data analysis tool has the responsibility of providing the most appropriate advice to users regarding customer interaction. These Einstein discovery suggestion systems are really useful for the user to gain insight into client behavior.

2. Einstein's Next Best Action Is:

With the help of Einstein's next best action, it can determine whether the customer is still interested in the business and what steps you could take to keep them interested. For example, if the best next step states to send them an email about the new deal, this suggests the new deal may be of interest to them as a customer.

3. Einstein Prediction Builder-:

Based on previously acquired data, this tool predicts how likely a potential client is to turn into a regular client or whether a customer would want to continue or not, and if the customer would pay on time or not. This tool also allows you to create bespoke probability queries.

4. Einstein Bots:

Einstein bots are smart chatbots that are designed to address often-asked consumer concerns, saving the user a lot of time. The question will be modified based on the information gathered. Thousands of Salesforce users benefit from this NLP approach.

5. Einstein Language:-

This technology relies entirely on NLP, and it is meant to analyze client sentiment by evaluating their messages through e-mail, bot, or other sources. For example, if a customer says, "You are doing a fantastic job," the Einstein language recognizes this as an appreciation text and notifies you of the customer feedback. This is an excellent and time-saving technique to examine client responses rather than manually reviewing hundreds or thousands of them in a day.

3.2 Use Speech Recognition Automatically to Give Your Company Context

Salesforce's Einstein Voice is an autonomous voice recognition program. This application may be used to acquire rapid updates during conferences and to notify customers of any new updates. It can also gather notes and pertinent contact data in real-time and quickly convert the text to sound for your company's benefit. It can also use Einstein Voice with Siri or Alexa to quickly brief your employees.

Salesforce's Einstein, according to author Yu (2019), is a one-of-a-kind application, being one of the few that integrates into a CRM system. This connection enables more unconstrained and effective usage of all Einstein apps in a strong Salesforce platform.Salesforce believes that Salesforce's cloud-based features elevate its advantages to a whole other level, while also distinguishing Salesforce's Einstein as a somewhat distinctive solution. No other software system can match Salesforce with Einstein in terms of capabilities and advantages [12].

Cloud-based services are becoming increasingly popular among many enterprises, including IT behemoths such as IBM, Microsoft, and Oracle. Using the cloud allows the user more flexibility because of every service and apps accessible via the internet. This reduces the need to install or configure anything.

The use of cloud computing has been seen as a technological breakthrough in the production of software, apps, and products. Moving to services that are cloud-based is an increasing trend, which explains Salesforce's rapid growth. Salesforce is now one of the most major cloud providers, offering essential services like a CRM system. Salesforce used to solely provide the CRM system, but it has now grown into a variety of other areas, including mobile applications and AI, known as Einstein [13].

According to Huang et al. (2019), Intelligent user-interface technologies include five main components: voice input, natural language, voice output, intelligent interpretation, and agency[14]. Einstein claims to be a top-tier smart assistant, giving exceptional quality in all of the previously described attributes [15].

Because of the growing desire for dynamic and accessible social connections through the internet, Einstein's Cloud Community capacity is in high demand. The aim of AI in this component is to provide more personalized feeds, answers, and recommendations for the user. AI can identify unanswered queries, leaving no stone uncovered and no customer dissatisfied [12]. In his work, Johan Yu addresses Einstein's independence and argues that each individual is free to judge facts in whichever way they choose, utilizing whatever information they want and on whatever platform they want. Customers may use Einstein to construct custom datasets, methods, dataflows, and dashboards as needed, giving them even more usability options [16].

3.3 Integration of NLP in Salesforce

NLP is a key AI method used in Salesforce Einstein to understand customer context and sentiment, as well as providing more relevant insights and tools. Having a powerful CRM driven by AI will allow your sales team to achieve success.

3.3.1 NLP Overview

NLP determined context and sentiment using machine learning techniques based on an input text[17].

Context Analysis examines the significant words in a string of text to find the subject matter, verb, adjectives, and so on. This service is provided by a number of APIs, including Watson by IBM, Wit, Microsoft Cognitive Service, Google, and Cloud Metamind. Everything is dependent on the amount of background you require. Some systems, such as Google, may be fed an infinite stream of text, like as Contract, the creation of documentation, and provide an overview or ambiguity.

Sentiment Analysis will look at the overall tone of the text. It will return a score ranging from -1 to 1, with -1 suggesting a negative outcome and 1 suggesting a favorable outcome.

3.3.1.1   Use of NLP Staff/Contact/User Personality Profiles- Application of NLP

Using a mix of Context and Sentiment Analysis, it can provide personality evaluations for each Staff, Contact, or User. Email, chatter, voice (Voice to Text Twillio integration), and social media (Twitter, Facebook, LinkedIn, and so on) are all accepted forms of text input.

There are several applications for this sort of analysis:
- Determine the optimal time and day to contact Staffs/contacts.
- Determine the most effective ways for interacting with Staffs/contacts/users.
- Employee background checks.
- Employee performance appraisals
.

3.3.2 Check the Tone

All inbound communications in the business would benefit from a tone check. Tone Check, like Spell Check, detects misspelled words and indicates the general tone of a text, email, phone call, or spoken word. It may also incorporate validation criteria in order to alert or prevent consumers from obtaining incorrect terms. This allows you to keep track of all client conversations, as well as assure customer service and sales while maintaining your company's unique identity.

It may also employ predictive algorithms to offer different words for the selected words that are appropriate for the tone you wish to create.

Service Request Escalation

Sentiment analysis may be used to evaluate service requests, phone conversations, email chains, and online chats in real time, allowing problems to be escalated to senior support personnel to address dissatisfied clients. This may also be used to reject or warn a customer service agent who is speaking adversely to them.

3.4 Speech Recognition integration

Following is the method to integrate the Salesforce speech system [18]:

The JavaScript Web Speech API converts spoken language into written text in a web browser. You can talk into a microphone, and the API will convert your words to text. Because it doesn't need any authentication, it is one of the simplest ways to implement voice recognition in Salesforce. It does, however, have certain drawbacks. You are only allowed 50 inquiries each day, and it works only with Chrome 25 or higher and Mozilla.

To add speech, use the JavaScript APIs Speech Recognition and webkit Speech Recognition. Speech Recognition is available in Chrome, whereas webkit Speech Recognition is available in Firefox. Because the interfaces of the browser's window object are not recognized by the Lightning component JavaScript controller, I had to utilize a Visualforce page in Salesforce. Using the Visualforce standard lightning component, the page is integrated into the page layout.

The records are obtained from the Leads object and shown on the component. The API will only listen if you click the mic button. You are left with a string to deal with after converting voice to text. You may then construct your own reasoning to handle speech. My solution checks for a command word and a first name(s) and then takes the necessary action. This solution has loops, but the purpose of this POC was to learn how the API functions.

IV. CONCLUSION

Natural Language Processing is one of the most effective methods for dealing with and extracting value from massive amounts of unstructured data. Here are three specific use cases that demonstrate how NLP technology may help with sales and marketing:

It may assist customers locate the information they need and inspire them with new insights, guiding people to make a purchase and repurchase.

Using enormous amounts of unstructured data, NLP may help you identify consumer happiness more broadly and precisely. This opens up more opportunities to incorporate client feedback into product development in order to remain market-relevant.

Using NLP techniques to automatically categorize product data and establish a solid and foundational database of your company's most important data assets will help you to be more effective when developing intelligent apps and analytics.

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