Applications of NLP for HR

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Abstract

Natural Language Processing has brought in a huge difference in the field of HR. NLP has influenced and has been dominating in this area, making employees and employers lives easier. It is an area of finding out how computers can understand humans text or speech to do favourable things. Let us discuss the methodologies like NLP for Resume screening, interviewing, employee engagement and chatbots for employees. We will know NLP's value addition to the field of HR. Let us explore how NLP can improve the efficiency and how effective it is in relevant to HR.

1. Introduction

The transformation in various fields has been evident with the introduction of Natural Language Processing. It has rapidly grown in people analytics and communication. Natural Language Processing has influenced the HR analytics and has changed the future of HR. In the field of fast growing technology, people intend to make the right decisions over a short period of time. This can be done by making machines smarter and making the machines understand the language spoken or written by humans. It is now the era of human - to - computer interactions which significantly plays the role in HR.

Natural Language Processing gives the essence to communication in people function and hence, natural language being the medium of communication between humans and computers. The scope of NLP can be spread out and can be broader only through operational HR, where communication is solely medium in HR. By implementing NLP in broader way in HR applications, there can be seen a lot of progress and thus minimizing the manual intervention, which in turn saves a lot of time. NLP, an ever-growing field amazes the world with its applications. It is very interesting to know how NLP helps in our day to day life.

The role of Natural Language Processing in HR has a high volume of impact in several areas. It includes recruitment process, employee feedback, surveys, learning, legal counseling etc… Let us study few applications of NLP in HR in this paper like NLP for Resume Screening, NLP in interviewing, Chatbots for employees and NLP in employee engagement. It has been the most effective method to be used in this modern era. Today, in the world of unstructured and huge data, we need the data to be accurate for which the usage of machines working in a smarter way gives higher efficiency and saves a lot of manual work and time[1].

2. Main Topic - Methodology

2.1 NLP for Resume Screening

Extraction of useful and essential information is very important in an organization. For any hiring procedure, it is highly recommended to have the right resumes for the relevant job description in order to fulfill the requirements of the organization.The most significant step in recruitment process is screening/ranking the resumes to decide whether the candidate is fit to move forward or to reject him/her, thereby it is based on their skills and experience. This has been developed by an algorithm which gives the best candidate profile by considering the given job criteria. This requires an intelligent application where it can understand the behaviour of human language and extract the features to implement it[2].

To perform Natural language processing of larger data sets, there is an implementation and development in Hadoop framework which can be used to scale any kind and any volume of data.Apart from this, we have several other methodologies which are used for screening and ranking purposes[2].

The recruiter will be helped by the procedure mentioned to shortlist the resumes based on the core skills and previous experiences. Here are the steps involving while resume screening.

The below illustration shows major steps involved in the process of resume screening. It does the data gathering in the initial step - resumes are gathered from different sources and data will be pushed to Data processing step. Data will be converted to one common format when pushed to Data processing and tagging.

The second step involves Data Processing - it extracts the required information from the provided source. Following this, there is an Attribute Tagger. In this step, the main attributes like candidate name, experience, skills will be checked. Here, the significant tool of NLP - Named Entity Recognition (NER) is also used as it identifies the proper nouns from an open domain text[2]. The required and necessary information is stored in the storage for future usage.
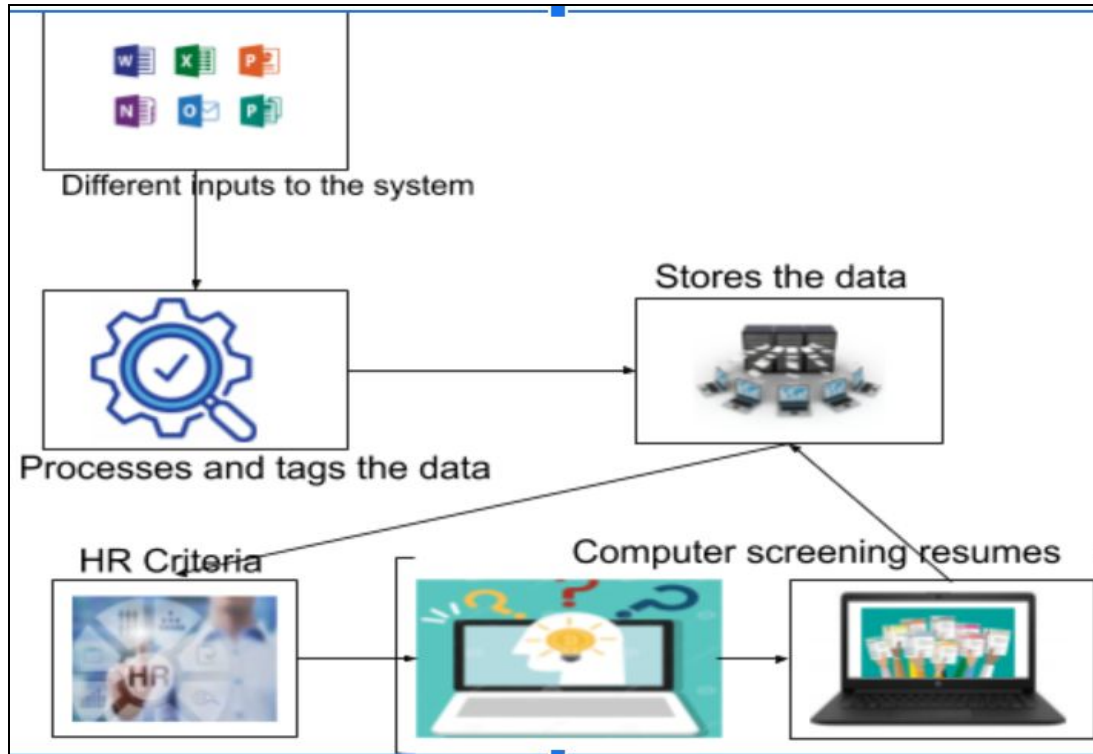
Fig 1. Shows the block diagram for Resume Screening (Methodology that is used for Resume Screening) [2]

Based on HR criteria, the resumes are screened. In addition to this, there will also be resume rating, "all resumes will hold certain ranking based on the qualification levels. The default rating starts at 1 to 5 rating. The rating would be generated automatically by the system"[2].

2.2 NLP for Interviewing

The feedback received from a candidate is very important for a company's value and growth.The feedback from the candidate is the experience which they had in the company while working or while giving the interview. It is better if the company gives them quick and painless interviewing process and this makes to win over candidates easily. NLP has enhanced to automated interviews where hiring managers can pick up the candidates on their behaviour[3].

Managers can pick the right candidate in the interview process using Chatbot, an NLP(BOT), where it is programmed to find the candidate's ability by analyzing various aspects like speech, facial expressions and other behaviour. It also stores messages or even sends an email which acts like a complementary and can be used when required.
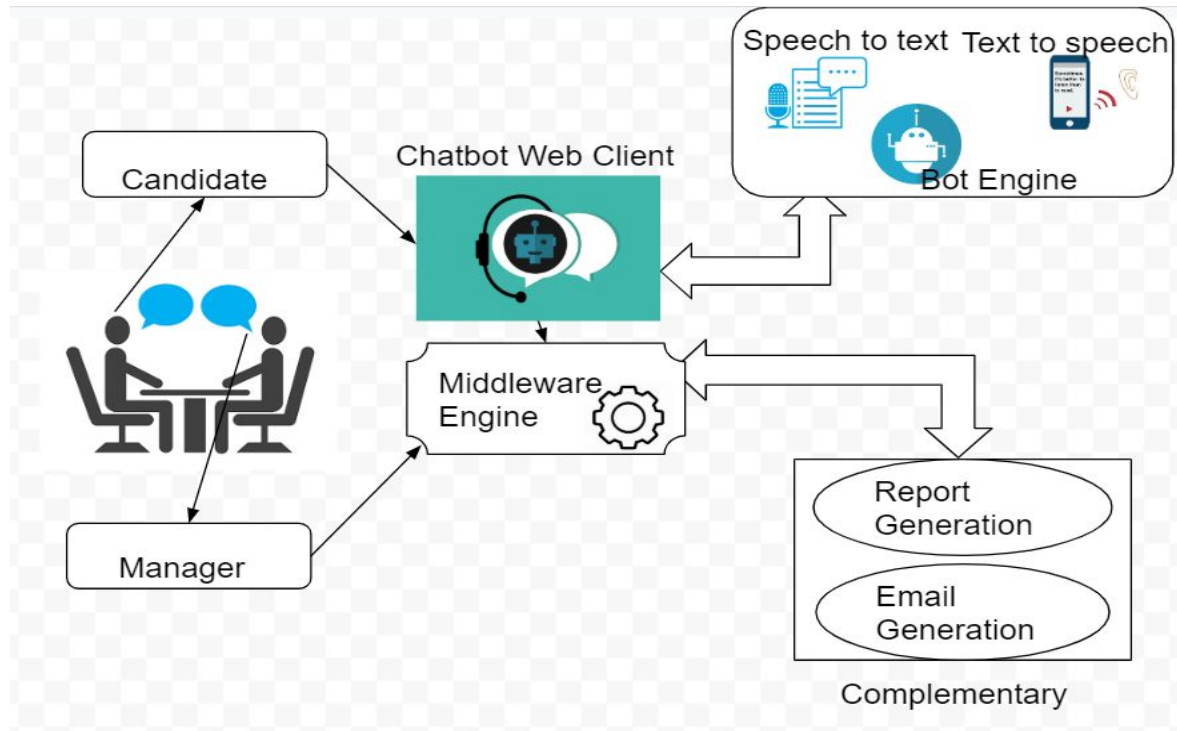
Fig 2. Shows the block diagram of NLP for Interviewing (Usual Methodology used for Interviewing using NLP)

The middleware engine helps to get along the custom integration logic into multiple parts of the chatbot life cycles such as receiving messages, matching message pattern and sending the messages back to the user[7].

2.3 Chatbots for Employees

Chatbots not only handles the customer services, but also helps to deliver extraordinary business value by designing the workflow for employees. Chatbots are easy to use, helps employees to save their energy and time to do some value added productive work. It increases efficiency and employee satisfaction in the company[5].

It is highly known fact that employees always prefer automated responses/conversations than having a call over phone which requires a lot of waiting time. This kind of application can be implemented to achieve maximum efficiency around 90%. This has been deployed in companies for internal usage by the employees which advances their goals.
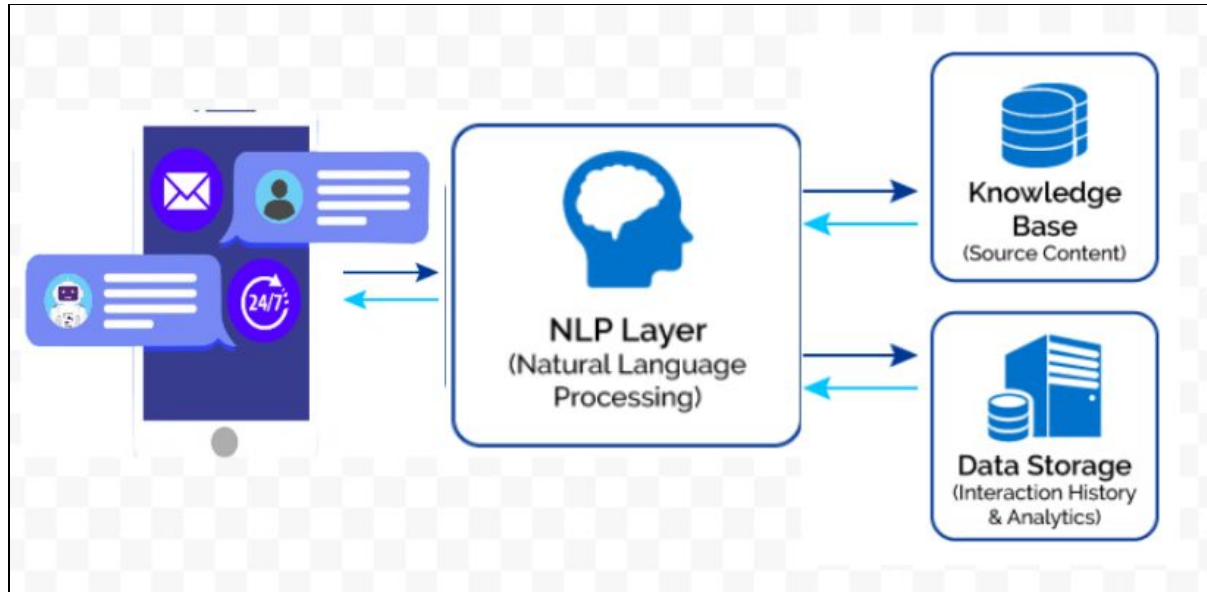
Fig 3. Shows the Block diagram of Chatbots for employee[9]

Let us mention few Use cases which prove that chatbot is an employee friendly:

2.3.1 "Chatbots facilitating employee-onboarding"[5]

It is very tedious job if you have to enter the same information often while onboarding an employee. A manager will have a lot of other stuff to complete rather than doing the same work again and again.In most of the case, this doesn't seem to be an efficient work to log an employee in a company. During this time, there comes the chatbot which has the ability to control different tools by saving a lot of time by delegating the processes into the bot. By programming the chatbot to register and onboard the new employee by itself using API's. The manager has to just give the minimum information to the bot[5].

2.3.2 "Chatbots assisting employees in day - day tasks"[5]

Employees will have many tasks which need to be taken care on their daily routine. Some of them might not be too complex to do it, but consumes a lot of time in doing that particular task, which kills a lot of time like scheduling meetings, requesting time off, booking meeting rooms, scheduling calendars and so on. To organize all these tasks takes a lot of time and which results in low productivity. Hence, if we program the bot to do respective tasks, chatbots will take all these work and reduces our time in processing these tasks. As a result, employees can concentrate on the work that is more important and there will be more in efficiency as well[5].
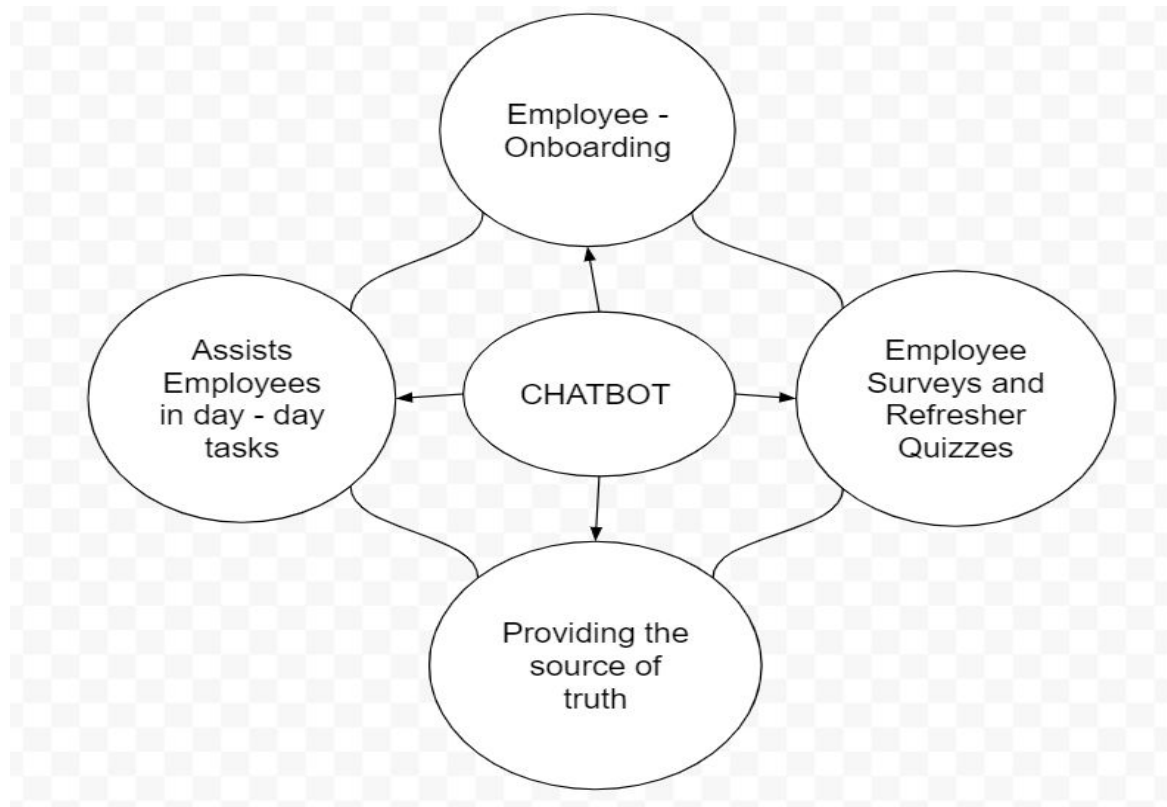
Fig. 4 Shows the block diagram of applications of Chatbot

2.3.3 "Chatbots providing the source of truth: from taxes to policy data"[5]

Chatbots are also convenient when it comes to product development, any data with respect to employees, administration changes and so on. There are several cases where company and other policies get changed, this will again require a lot of time to comply with it. This will also include new internal processes which will create a lot of confusion and overload the employees. Likewise, employees might also face issues with respect to taxes,legal changes which affect the business and also creates blockage for an employee from day to day work. However, there is always scope for new employees for an onboard, but that doesn't seem very smart thing to do. By choosing chatbots in these scenarios will help the organization for betterment. Chatbots should be leveraged to basic knowledge areas, so that it can anticipate such events and work accordingly[5].

2.3.4 "Following up with Employee Surveys and or Refresher Quizzes"[6]

Chatbots can organize employee surveys to know how processes took place after they are on boarded. It can be more of employee-specific and get their feedback on the company's culture

and areas where it needs to be improved. Chatbots can also conduct quizzes on HR operational training on safety procedures and information records. At the same time, chatbots will also address employee needs which will in turn results in employee satisfaction[6].

2.4 NLP in Employee Engagement

"Only 4% of company and HR leaders believe they are very good at engaging Millennials and other generations in the work environment"[3]. Employee satisfaction is very important in any organization. Dissatisfied employees can lead to harm in the company's business. Employee satisfaction can improve the level of business in any organization and employees will tend to work something more than required. To know whether employees are satisfied in the company, we need to have employee engagement programs which will tell us the level of satisfaction each and every employee has towards the organization[3].

NLP can be used to analyse how employee feels by their responses which inturn can be used to evaluate engagement levels and to have a good understanding in an organization between employee and the employer.

Employees will give their responses via conversation channels such as messengers, mobiles, voice assistants and so on and these responses will be captured by NLP which can identify how an employee feels based on the responses provided. This will be used in the Enterprise systems to know the level of satisfaction of each and every employee of an organization.
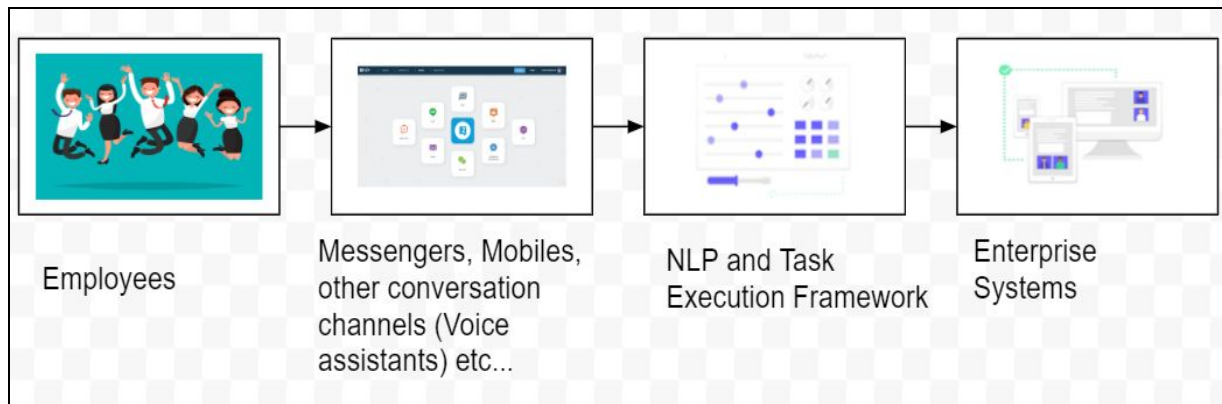

Fig 5. Shows the block diagram of Employee Engagement using NLP (Usual methodology for employee engagement using NLP)

We have several platforms and softwares which can be used for employee engagement in any organization. For eg: Remesh, Ushur and so on... This has been very important in relevant to Human Resource, as company's review will be from the employees and their feedback. This is in

turn related to the satisfaction of the company the employee has. Employee Engagement plays a vital role in an organization.

3. Future of NLP in HR

NLP has been the most wonderful and leading technology. Natural Language Processing is the language used in automated chatbots. Highly advanced chatbots are used for the application of number of internal tasks in any organization. By implementing NLP in Human Resource, "it will enable HR to have hreater intelligence and leverage within the organization". Future of HR will have positive change and growth with the implementation of NLP in all HR fields[8].

"Going forward in 2019 and beyond, NLP will be assured to use in many teams with respect to Human Resource"[8].

- ❏ "Reducing administrative burden
- ❏ Improving in employee onboarding
- ❏ Providing efficient recruitment experiences"[8]

There is no doubt to say that - NLP is going to change the world of Human resource by implementing all these to the fullest.

4. Outlook and Conclusion

In this report, I have brought in the applications of NLP in HR with various areas and shown the wide set of applications that are involved with respect to HR. As machines getting smarter our work is getting easier. We have got to know the need of NLP in HR, as it has reduced the burden of manual work and has saved a lot of time and energy. By learning and using them in everyday life, the quality of work can be improved[4].

By implementing NLP in HR more in future days, the efficiency and accuracy of work will be increased which is most required for any sector. I hope there will be more use of NLP in upcoming days in order to make our day to day tasks easier. Knowing the fact that it can change the future of HR, it is now the time to implement in all the areas of Human Resource with the technology that is dominating the world. To conclude with it, I can say that NLP has revolutionized the world with its essence.

6. REFERENCES

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