Machine Learning Design on Human Resource System

EkaAnggaLaksana[1]

[1]Informatics EngineeringWidyatama University Bandung, Indonesia

[1]eka.angga@widyatama.ac.id

Abstract—This paper focuses on explaining how AI has been integrated into different HR functions and their impact on organizations, employees and the environment. By "machine learning" (ML) we mean a series of adaptable algorithms and learn from data to make better and better solutions to a function, usually predictions. In the business world, machine learning or AI applications are the most common is concerned with surveillance, where a data scientist creates machine learning algorithms, determines the most appropriate metrics for assessing employee performance, and trains algorithms using a sample dataset.

Keywords—Human Resource, machine learning, AI

1. Introduction (*heading 1*)

Government law concerning about Personnel Principles, then will be carried out the development of a personnel information system. The Ministry of Transportation is the ministry within the Government of Indonesia in charge of transportation (transportation). These duties include the provision of services, infrastructure and means of transportation, maintenance and quality improvement for the welfare of the people. The main task of the Ministry of Transportation is to assist the President in carrying out some government tasks in the field of transportation.

From the data on government human resources, there were as many as 4,286,918 as of 30 June 2019, which were divided into central and regional agencies. To record all existing employee data, it is necessary to develop a system to increase security in employee data management.

For application development, the name will be changed to GED (Government Employee Data). Existing applications have a drawback, namely those that have full authorization are only part of the central government with a number of users who have been specified. The Governmen Employee data application will be created with a Menu System as needed, to anticipate possible errors in its use.

To meet the needs, the development of the staffing system will be made to develop a staffing system that features attendance, news information, employee performance announcements and email delivery.

A. AI in industry

Currently AI appears in various forms and needs in software, and is well integrated into certain business processes. One of the business functions that can take advantage of AI is in the HR field such as in the recruitment process, orientation, training, and others. The implementation of AI into HR does not mean completely replacing the manager's role but as a support for HR managers in providing strategic decisions, focusing on key functions, reducing repetitive work and selecting low-value jobs. AI is very useful in helping work processes in the field of human resourse, especially in streamlining or reshaping functions and units to make them more efficient[1].

AI in healtcare

Health care is one of the main sectors taken many efforts to implement AI in several areas such as patient care: automatic prescription, pregnancy control medical, personal health care and treatment imaging and diagnostics, medicine discovery and other health care management.

1) Artificial Intelligence in Finance

Financial Management which is the main function in any business and industries such as banks and insurance offices implementing AI in billing, robot advisory, credit borrowing, profit reporting.

2) Artificial Intelligence in Transportation

Transportation consists of goods and the public transportation used by the general public as well by the company. Implementing AI in transportation is an important task about reliability and convenience. However, many areas have been tested in the field of automation transportation with the help of AI like autonomous driverless tools, trucks and cars.

3) Artificial Intelligence In Retail

Retail, especially online shopping, gets a big profit amount of data relating to customer preferences, payment patterns and their preferred shop. Provide this data in AI helps companies tailor their shopping to general audience based on their preferences. System AI-based shopping helps marketers by providing relevant. In terms of advertising also for customers it helps in customizing their tastes and finally from a financial collection point of view, making invoices and payments is done in an online manner automation.

The speed at which business is growing in management is moving away from big data (BD) to machine learning (ML) to artificial intelligence (AI) are staggering. However, rhetoric and reality are a different matter. Most companies do struggling to make progress in building data analytics capabilities. As much as 41% percent CEOs report that they are completely unprepared for using new data analytics tools, and only 4 percent said they were "mostly" ready to implement AI[3].

"AI" conventionally refers to a broad class of technologies that make computers possible to perform tasks that normally require human cognition, including decision making. We The discussion here is narrower, focusing on the subclasses of algorithms in AI that depend especially on increasing the availability of data for predictive tasks.

"AI" generally refers to the broad class of technology that makes computers possible to perform tasks that normally require human cognition, including decision making. In a narrow sense that with a focus on the sub-class of algorithms on which AI relies primarily on increasing the availability of datasets to make predictions.

2. Benefit in Human Resource System

The acquisition of talent is one of the functions of the unit HR. Most of the recruiter and HR spend their productive time in the recruitment process which includes gathering talent, screening CVs, ordering goods, scheduling and interviews, job seeker profiling. This work has potentially been reduced to a large extent with the help of AI. Employee selection software has eliminated nearly 75% of the jobs associated with the recruitment stage[1].

B.   Learning and Development

AI plays a role in Learning and Development (L&D) very. The development program for everyone needs to be implemented, namely by means of employees regularly to improve their quality, productivity and also for skill development. It is an ongoing process provided for both new and senior employees. With the help of AI, HR development can be adjusted and provide a more customized experience according to user needs[2]. So people can try to learn according to their talents. HR must ensure that the material and is relevant to enter into this learning along with an efficient assessment system so as to make it focus on training materials and produce employees to be more involved. With AI in HR, the focus of HR development lies only in designing quality HR programs based on the latest trends according to the times, new skills etc. that suit each individual's individual talents and make them available through e-learning platforms.

The first problem is that the complexity of the HR outcome is what constitutes the definition of a "performer." There are many dimensions to that answer, and their measurements
with precision for most jobs is quite difficult: the performance score is the most widely used measure, it has been widely criticized for data validity issues
and there is bias, and many entrepreneurs give up
all. Quite a complicated job is
mutually cooperate with the team and therefore individual performance which is difficult to achieve regardless of team performance

Data sets in HR tend to be very small by scientific data standards. The number of employees that even a large company might have is nothing compared to the number of purchases their store customers make.
Additionally, many interesting results are difficult to observe, such as employees being fired for bad behavior. Employee data science techniques perform poorly when they can predict long-term employee profile outcomes.

3. Problem Definition

- How to design a staffing database system that suits your needs?
- How can the system provide accurate employment information, especially regarding data collection, leave, attendance, employee appraisals?

From the formulation of the problem, the problem is that the existing system has not met the needs of its users. To meet the needs, the development of the staffing system will be made to develop a staffing performance system that features attendance, news info, announcements, and email delivery.

4. Technology background

C. Programming Language
1) Javascript
JavaScript is one of the most widely used programming languages in the last twenty years. Even JavaScript is also known as one of the three main programming languages for web developers:
1. HTML: Allows to add content to web pages.
2. CSS: Determines the layout, style, and alignment of website pages(Paadi et al., 2019).
3. JavaScript: Improve the appearance and system of web pages. JavaScript was created and designed for ten days by Brandan Eich, a Netscape employee, in September 1995. Initially this programming language was called Mocha, then changed to Mona, then LiveScript before finally officially bearing the name JavaScript. The first version of this language was limited to Netscape circles. The functionality offered is limited. However, JavaScript continues to be developed by a community of developers who are constantly working on this programming language.

In 1996, JavaScript was officially referred to as ECMAScript, where ECMAScript 2 was launched in 1998 and ECMAScript 3 was introduced in 1999. ECMAScript was developed until it finally became JavaScript as we know it today. Not only cross-browser, JavaScript can also be used on various devices, including mobile devices and computers.
Since then, JavaScript has continued to grow and develop. Ultimately in 2016, 92% of websites were found to be using JavaScript. In just twenty years, JavaScript has moved from a programming language that is limited and "primitive" to become one of the most important tools for web developers. If you spend most of your time surfing the internet, then you must be very familiar with JavaScript.

2) Vue js
Vue Js is a progressive framework for building user interfaces. Unlike some other monolithic frameworks, Vue is designed from the ground up so that it can be gradually adopted. The core library is focused on the view layer only, and is very easy to integrate with other libraries or with existing projects. On the other hand, Vue is very capable of delivering and supporting powerful Single Page Applications when combined with modern tools and library support.

If you want to learn more about Vue, we created a video about its core principles and project examples.
If you are an experienced frontend developer and want to know how Vue compares to other libraries / frameworks, please visit Comparison with other frameworks.

5.
6. Solution

The application solution offered is the creation of a personnel application, which has the following features:
- If employees want to enter the application and want to see personal data, agency news in real time, see the latest updates regarding employee agencies, they can log in using their phone number or it can be called OTP (One Time Password)
- Registering employees who are in the agency, this employee data includes NIP, Full Name, Gender, Address, Division, Number of tardiness, and position
- Grouping employees based on their respective positions, so that administrators can easily find out who is the leader of each division.
- Providing information such as internal news to all employees, this news includes whatever is happening in the agency, this news is used if there is news that is company privacy and cannot be released to the public
- Providing notification to employees, this announcement is different from news, where in this announcement, it contains the events that will be carried out by the agency.
- There is a message menu, so that employees can interact with other employees internally, and this message is also used if there is a need between employees
- For admins, employee management consisting of:
Sorting employees based on division, position, name, and closest distance. Automatic monthly attendance report Making salary reports that are more practical. Provides agency news to employees. Provide announcements to certain employees.

- There is an inbox menu, where this menu contains all electronic mail files sent by someone to that user. In the inbox menu there is also a filter, to make it easier for users to sort files by type, or by time

- In electronic mail details, there are several buttons, namely: The Disposition button, which is used if it is felt that one of the e-mails received by the employee concerned is important which is required to be present in the agenda, but the employee cannot attend, which ultimately disposes the e-mail to his subordinates to attend the agenda. Forward button, which is used to send back all contents of electronic mail in the inbox menu. Print button, the button used to print documents from electronic mail. The Add Folder button, which is where the letter that we are actively opening, can be entered into a folder that we previously created to make it look tidier and easier to find by group.

- For employees, you can enter the application just like the admin by using a phone number. This telephone number is registered by the agency administrator

- Employees can also receive notifications, news, e-mails, messages, change profiles, and download work performance every month

- Employee performance in the application, can be seen in the performance menu, this menu contains how employees perform each month, employee performance contains how many employees come to the office on time, how on time they complete each job, and how the quality of each job.

- Profile menu is a menu that is used by users to view personal data details, such as address, telephone number, email, place of birth date, and division.

- Attendance is done by submitting attendance on the application, and attaching a photo of the employee's face every time of entry, and upon leaving. When an employee does attendance, the application will record the face, name, location of the employee, and time of attendance

D.   Project schedule

Meeting 11

Title Name: Human Resources System Application Development

Processing Time: 5 months

Work breakdown:

1. Determine the processing time
2. Analyze existing systems
3. Analyze shortcomings and system requirements from reviews and interviews to people who have used it
4. Analysis and design of system development
5. Make use case diagrams
6. Create an activity diagram
7. Creating sequence diagrams
8. Creating a class diagram
9. Creating an Application menu design
10. Determine the type of data base add or use the old one
11. Determine the infrastructure
12. Make the application
13. Create the application document
14. Performing tests on Applications (SIT, UAT, TO)
15. Implement the application to several users at the initial stage
16. Share knowledge with users
17. Perform bug fixes
18. Complete all documentation
19. Update the application completely
20. Application maintenance

Table 1Work Breakdown System

No	Activity name	Kode	Lead Activity	Duration
1	Determine the processing time	A		150
2	Analsysis system	B		3
3	Analyze shortcomings and system requirements from reviews and interviews to people who have used it	C	B	7
4	Analysis and design of system development	D		3
5	Membuat use case diagram	E	D	1

6	Activity diagram making	F	E	1
7	Sequence making	G	F	1
8	Class Diagram making	H	G	1
9	Interface design	I	D, E, F, G, H	3
10	Determine database scheme	J	D	3
11	Infrastructure scheme	K		3
12	Code Implementation	L	I, J	85
13	Making documentation	M	L	5
14	Application testing	N	L	10
15	Early user test	O	N	5
16	Knowledge sharing	P	O	10
17	Bug fixing	Q	N	3
18	Document finalization	R	Q	3
19	Application update	S	Q	3
20	Maintenance	T		-

7. Conclusion

"Decision making", as the final stage of machine learning, relates to how we use information from machine learning models in our daily activities. In the HR area there are decisions, leaders may have more discretion now in how they use them evidence of a model that has been created than they have in the company's past when hiring and other processes are standardized across units. Managers today usually have the option of understanding or ignoring evidence about predictions, acting on recommendations, and generating their own data about actions such as the recruitment of employees in the form of standardized interviews.

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