

Job Recommendation System Using the Content-Based Filtering Method

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Abstract

On the xyz application that is already running, it is a job vacancy portal. In this system there are has two users, as business accounts and job seekers. Where business accounts can post vacancies and job seekers can apply for vacancies. In this running system, when job seekers display the vacancies list, there is a list of the latest vacancies that have been posted by business people. The problem with the list of vacancies is that the list of vacancies that appear is still not in accordance with the wishes of the user as the job seeker account, thus reducing the interest in application users. There-fore, a job vacancy recommendation system is needed that can correct deficiencies in the list of vacancies that are displayed to users as job seekers. The purpose of this research to be able to pro-duce recommendations for suitable job vacancies. In this research, the authors use the content-based filtering method.

Keywords: Recommendation System, Machine Learning, Content-based Filtering

1. Introduction

Work is an activity carried out by humans. In another sense, work is done by humans to obtain certain goals. In work involving 2 parties, between those who give work or those who work, the working party will receive a wage after completing the work properly according to what was agreed by both parties, and the employer will get results.

The xyz application that is already running is a job vacancy portal. In this system there are two users, namely as business accounts and job seekers. Where business accounts can post vacancies and job seekers can apply for vacancies.

The system is basically a group of elements that are closely related to each other, which function together to achieve certain goals (Mulyadi, 2012). The system can be interpreted as a set of sub-systems, components that work together with the same goal to produce predetermined output (Mulyani, 2016). Thus, from these definitions it can be concluded that the system is a set of elements that interact and complement each other in the same goal to form an integrated structure.

The Recommendation System is an application model from the results of observing the state of customer desires so that it requires an appropriate model according to wishes to make it easier to make decisions when choosing a particular product (Kadyanan, 2017). The Recommendation System utilizes a person's opinion on an item in a certain domain or category, to assist someone in choosing a vacancy. Therefore, SR requires the right recommendation model so that what is recommended is in accordance with the wishes of the customer, and makes it easier for the customer to make the right decision in determining which one to choose.

Job vacancies are information about a job that is available for job seekers, especially for people who don't have a job or are looking for a job accompanied by

certain conditions. Information on job vacancies can reduce unemployment (Wahyudi & Muhammad, 2012). This method is user independent, does not depend on the situation whether the item is a new item (which has never been selected by any user) or not a new item (Apriani et al., 2021; Mondy et al., 2019).

2. Method

The job vacancy recommendation system uses a content-based filtering method. There are several steps to create a recommendation system. The ledge that the author will use can be seen in Figure 1.

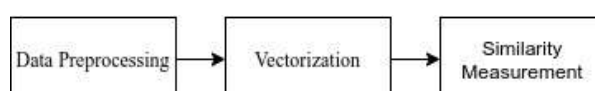


Figure 1. Research Methods

These steps are needed to process the data, determine the document weight and measure the similarity of each document, which will determine the document that is closest to the user's preference. The complete design can be seen in Figure 2

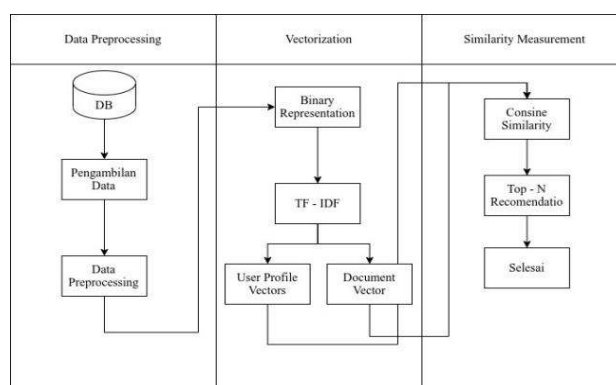


Figure 2. System Flow

3. Results and Discussions

First, the data set in the database is retrieved first, there is some data that needs to be retrieved, namely data from the job list, job seekers and skill tables, which are then converted into three columns consisting of index, skill, apply, dislike. The results can be seen in Figure 3 below.

index	skill	di lamar	dislike
Job_1	Python,html..	1	0

Figure 3. Dataset

Preprocessing here is done to get data compatibility where the data can be easily processed. The data previously obtained, namely the job list data, has been combined and formed several columns. This process needs to be done to make it easier to get vector values in the document. The results of the preprocessing data can be seen in Figure 4.

No	job	python	admin	html	word
1	Job 1	0.707106	0	0.707106	0
2	Job 2	0	0.707106	0	0.707106

Figure 4. Preprocessing Results

Term Frequency — Inverse Document Frequency or TF — IDF is an algorithmic method that is useful for calculating the weight of each commonly used word. The DF value is the value of the number of attributes in the entire document. To calculate the IDF value using the log10 equation (amount of data / df), in the python skill " $\log_{10}(5/3) = 0.204119$ " the calculation results can be seen in Figure 5.

DF	3	1	2	1
IDF	0.204119	0.698970	0.397940	0.698970

Figure 5. TF-IDF

4. Conclusions

Based on the research objectives, the conclusion from the results of this study is a job recommendation system using the content-based filtering method with the results in the form of a list of vacancies that are adjusted to users with a suitability level that is processed based on how much data the user interacts with vacancy.

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