LITERATURE SURVEY

| Team ID	PNT2022TMID52437
Project Name	Project-Skill / Job Recommender Application

LITERATURE SURVEY:

This paper provides a review of the job recommender system (JRS) literature published in the past decade (2011-2021). Compared to previous literature reviews, we put more emphasis on contributions that incorporate the temporal and reciprocal nature of job recommendations. Previous studies on JRS suggest that taking such views into account in the design of the JRS can lead to improved model performance. Also, it may lead to a more uniform distribution of candidates over a set of similar jobs. We also consider the literature from the perspective of algorithm fairness. The recommender system is becoming part of every business. The business tries to increase its revenue by raising the user's interaction by recommending new items based on user preferences.

INTRODUCTION:

When the whole world is coming back on its feet, those businesses affected by this pandemic disease slowly tries to gain back the momentum it lost. Now is the time when the companies or businesses seek to invest in human resources, which would help them to gain the momentum it lost during this period. . When the governments across the world ask businesses to halt the operation in the effort of controlling the pandemic, many companies asked their employees to work remotely. In contrast, many other companies started to reduce their operational cost by terminating employees who were in permanent and contract roles. Individuals who lost their job to the consequence of shutdown are awaiting for their next opportunity. . Naturally, we human tries to strive through all difficulties to serve the purpose of our life. A daily job provides a sense of purpose to an individual(stillman, 2019), and he tries to get better at it, which results in leaving current employment and looking for a new one; this is a constant cycle of the hiring process.

To serve the constant cycle of the hiring process in the job applicant's perspective, many job companies have come up with solutions for providing the job board. Here a seeker looks up for the job he would find relevant to him and apply for it. As there are many job boards, applicants tend to use the tool that provides better services to them, services such as writing a CV, creating a job profile, and recommending new jobs to a job seeker. Job applicants have become more persistent and proactive in searching for new opportunities that fit their skills. However, companies that are targeting these job seekers are finding it challenging to identify the job seeker's skill and provide personalized job recommendations.

SYSTEM DESIGN:
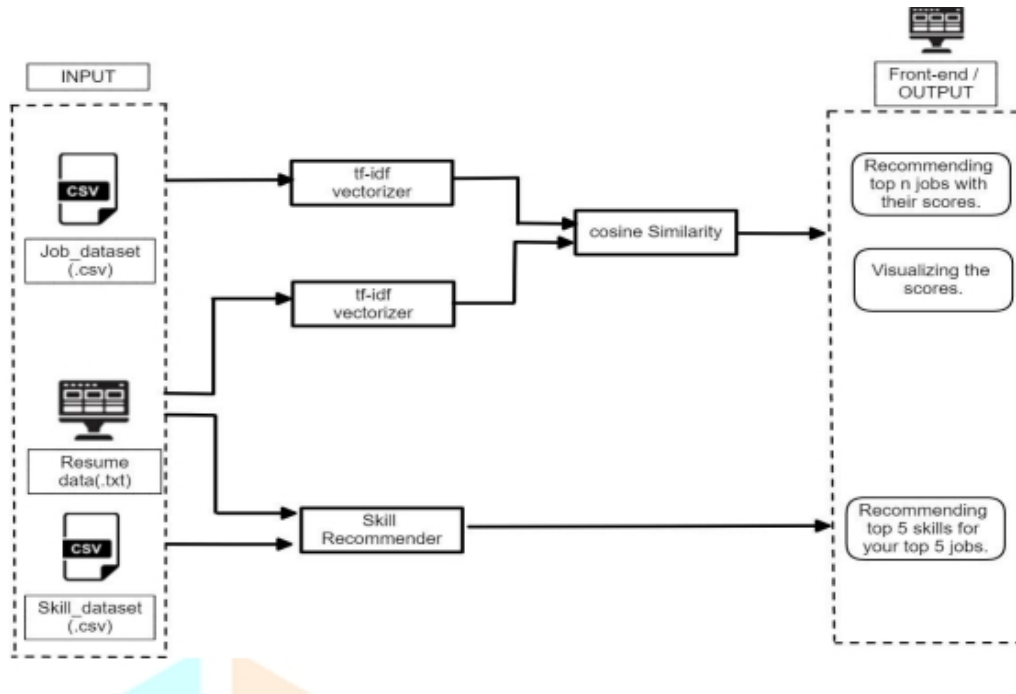
Overall architecture of recommendation system

The folder was read and then saved for later use. Using the tf-idf vectorizer, a matrix can be created from raw data for both the employment dataset and the user-collected resume. Then, using a method in similarity functions known as Cosine-Similarity, it will determine the scores between the job description of the job dataset and the resume. It involves calculating the total of the vectors dot products divided by the sum of their products divided by the products of their lengths. It will first display the top jobs and their scores in table format before visualizing the results in a pie chart. The system will then analyze the user's resume and the skill dataset to suggest skills that should be improved.

PROBLEM STATEMENT:

The dataset used for this research are sourced from Stack overflow survey data which is modeled as the user data for this research. The research question proposed by this research is "Can an efficient recommender system be modeled for the Job seekers which recommend Jobs with the user's skill set and job domain and also addresses the issue of cold start?". To answer the research question, below are the objectives that need to be satisfied with going forward .

PROPOSED SOLUTION:

The results of job recommender system which are run in the python environment are presented. Recommender system is provided with the profile vector of user and item to generate

a set of item as a recommendation to user in question. Profile vector of a user holds the information regarding the preferences of user on IT skill and domain specific information. Where as, profile vector of item holds the information regarding the skills and job domain that is required for that job. Also as defined in section 1.4, the purpose of this research was not only model a job recommender system using user's skill set and Job domain but also to address issue of cold start. To complete the research, we had set ourselves a objectives which ease our way in completion of the research. As to conduct the research, the need for two different dataset, which will be used create a user vector and item vector was required. For the purpose of user data we had choose the data from stack overflow survey; Without the Job data set, we wouldn't be able to continue this research. So, In this study, the task of web scraping was performed on several techniques and finally opted to continue the study by scraping data using R programming in R-studio environment.

If a user makes a changes in a profile, it would affect the profile vector and recommends the job that are similar to profile vector. The new recommendations are made to the user, when new jobs are added top the data layer, the job vector gains high similarity score.

CONCLUSION:

Therefore, We conclude that job recommendation system with analysis of job description to recommend a job based on user's skills and preferences presents itself as worthy Recsys model in recommending open position to the job seekers when looking for a new positions. Thus, among the different threshold and filtering techniques, we chose to model the recommender system using content-based filtering which is achieving F1-score of 66% with the threshold of 0.3 with average coverage of 53%.

REFERENCES:

1. Al-Otaibi, S.T. and Ykhlef, M. (2012) Job recommendation systems for enhancing recruitment process in: Proceedings of the International Conference on Information and Knowledge Engineering (IKE) p. 1 The Steering Committee of The World Congress in Computer Science, Computer . . . https://ijcrt.org/papers/IJCRT2208099.pdf

2. Adomavicius G, Tuzhilin A (2005). Toward the Next Generation of Recommender Systems: A Survey of the State-of-the-Art and Possible Extensions. IEEE Trans. Knowl. Data Eng. 17(6):734-749.

3. Barbieri N, Costa G, Manco G, Ortale R (2011). Modeling Item Selection and Relevance for Accurate Recommendations: A Bayesian Approach. In Proceedings of the fifth ACM conference on Recommender systems (RecSys '11), Chicago, Illinois, USA, ACM pp. 21-28.
https://www.researchgate.net/publication/272802616_A_survey_of_job_recommender_systems

4.Jain, H. and Kakkar, M. (2019) Job recommendation system based on machine learning and data mining techniques using restful api and android ide in: 2019 9th International Conference on Cloud Computing, Data Science & Engineering (Confluence) pp. 416–421 IEEE

https://esource.dbs.ie/bitstream/handle/10788/4254/msc_jeevankrishna_2020.pdf?sequence=1&isAllowed=y .