TITLE: Skill / Job Recommender Application

TEAM ID:PNT2022TMID48943

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Problem definition

➢ The project aims at building an application of skill recommender solution through which the fresher or the skilled person can log in and find the jobs by using the search option or they can directly interact with the chatbot and get their dream job.

➢ To develop an end-to-end web application capable of displaying the current job openings based on the user skillset. The user and their information are stored in the Database. An alert is sent when there is an opening based on the user skillset. Users will interact with the chatbot and can get the recommendations based on their skills. We can use a job search API to get the current job openings in the market which will fetch the data directly from the webpage.

Problem Definition

TechnicalArchitecture
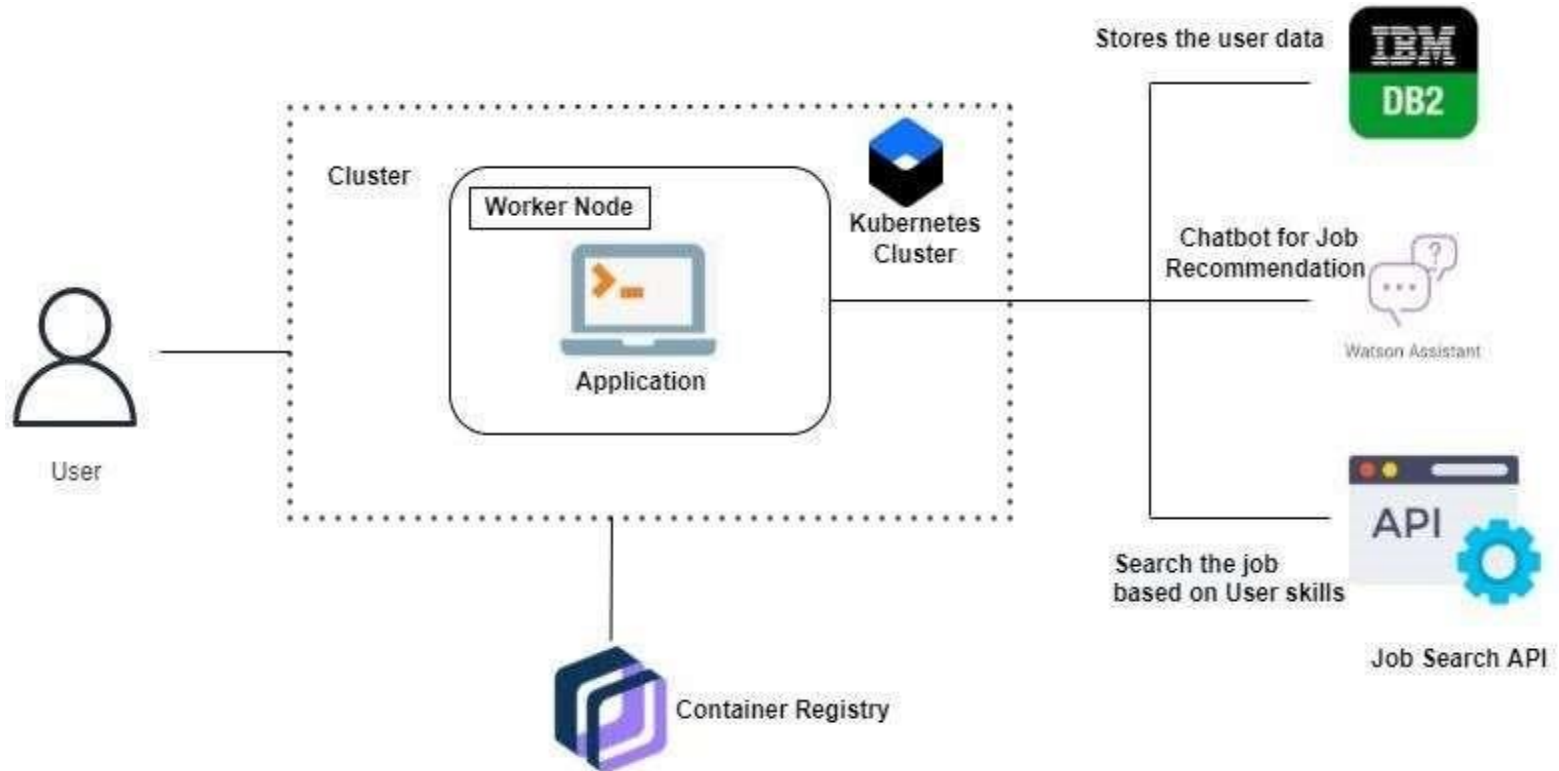
Survey Papers

Journal 1

Authors: Vachik S. Dave, MohammadAl Hasan, Baichuan Zhang, KhalifehAljadda and MohammedKorayem.

Title:Acombined representationlearning approach for better job and skill recommendation.

Abstract: In this experiments, it is shown that by jointly learning the representation for the jobs and skills, this model provides better

recommendation for both jobs and skills. Additionally it also show some case studies which validate the claims.

Criticalview:

- ❏ Their proposed representation learning framework is that it is transductive, i.e., it learns representation vectors of jobs and skills that are available in the input graphs.

- ❏ In Career-Builder, we often observe new job titles and skills, and their model is needed to be retrained to obtain representation vectors of these entities so that it can utilize in the job and skill suggestion.

- ❏ An inductive learning framework is needed to overcome this limitations.

Journal 2

Authors: Yao Lu, Sandy El Helou, Denis Gillet.

Title:ARecommender System for Job Seeking and Recruiting

Abstract : In this paper, a hybrid recommender system for job seeking and recruiting websites is presented. The various interaction features designed on the website help the users organize the resources they need as well as express their interest.

Criticalview :

❑ The user studies and evaluations based on online data is not conducted to evaluate the accuracy and usability.

❑ Other characteristics of the proposed recommender system are not refined accordingly.

❑ A preliminary evaluation based on dataset from production website shows that their system out performs content – based profile match and collaborative filtering on recommendation precision and user coverage.

Journal 3

Authors: W.Shalaby, B.AlAila, M. Korayem, L. Pournajaf, K. AlJadda, S. Quinn

Title: Help Me Find a Job :AGraph-basedApproach for Job Recommendationat Scale

Publisher: IEEE

Year of Publication : December 2017 **DOI:**

10.1109/BigData.2017.8258088

Abstract : Existing systems are mostly focused on content analysis of resumes and job descriptions, relying heavily on the accuracy and coverage of the semantic analysis and modeling of the content in which case, they end up usually suffering from rigidity and lack of

implicit semantic relations that are uncovered from users behaviour and could be captured by Collaborative Filtering methods (CF).

Criticalview :

❑ CareerBuilder serves job seekers in more than 24 countries with different spokenlanguages.

❑ Extending the content-based deep learning matcher to languages other than English in order to effectively bring the GBR to serve nonenglish speakingcountries is a priority.

❑ Deep learning approaches pave the way towards language agnostic NLP tools, so looking to train more models to capture the similarity between job postings for different languages

Journal 4

Authors: S. Choudhary, S. Koul, S. Mishra,A. Thakur and R.Jain

Title: Collaborative Job Prediction based on Naïve Bayes Classifier using Python Platform

Publisher: IEEE

Year of Publication: October2016

DOI: 10.1109/CSITSS.2016.7779375

Abstract: The paper aims to implement recommendation system based on collaborative filtering technique for job portals. The system is designed to suggest the jobs to the user depending upon his profile and by calculating a similarity index using Euclidian distance of two skill sets and then ranking them according to their Naïve BayesAlgorithm.

Criticalview :

❑ During application process often request sensitive information that could be used to steel an applicant's identity or commit financial fraud.

❑ Data acquired through an online form that is then transmitted or stored in an insecure manner can be vulnerable to exploitation.

❑ While it is also true that information on paper applications can be appropriated for illegal purposes, poor online security exposes applicant data to a much larger audience.

Journal 5

Authors: Jorge Valverde-Rebaza, Ricardo Puma, Paul Bustios, Nathalia C. Silva

Title: Job Recommendation based on Job Seeker Skills: An Empirical Study

Abstract: The contributions of the work are, they made publically available a new dataset formed by a set of job seekers profiles and a set of job vacancies collected from different job search engine sites, put forward the proposal of a framework for job recommendation based on professional skills of job seekers.

Criticalview :

❑ Their work will focus on performing a more exhaustive evaluation considering a greater amount of methods and data as well as a comprehensive evaluation of the impact of each professional skill of a job seeker on the received job recommendation.

❑ A certain profile with a proper representation, selecting a group of the nearest job offers based on the distance to that profile.

Journal 6

Authors: G. Domeniconi, G. Moro, A. Pagliarani, K. Pasini and R. Pasolini

Title: Job Recommendation From Semantic Similarity of LinkedIn User's Skills

Publisher: SCITEPRESS - Science and Technology Publications, LdaSetubal, Portugal

Year of Publication: July 2016

DOI: 10.5220/0005702302700277

Abstract: Until recently job seeking has been a tricky, tedious and time consuming process, because people looking for a new position had to collect information from many different sources. Semantic associations arise by applying Latent Semantic Analysis. They use the

mined semantics to obtain a hierarchical clustering of job positions and to build a job recommendation system.

Criticalview :

❑ To increase accuracyof recommendation, for example by testing other machine learning methods such as nearest neighbour classifiers are even exploiting the generated hierarchy.

❑ The vector representations of profiles, skills and positions could possibly be improved, for example by borrowing suitable weighting schemesfrom text categorization.

Journal 7

Authors: Miao Jiang, Yi Fang, Huangming Xie and Jike Chong

Title: User click prediction for personalized job recommendation

Abstract : Major job search engines aggregate tens of millions of job postings online to enable job seekers to find valuable employment opportunities. Predicting the probability that a given user clicks on jobs is crucial to job search engines as the predictions can be used to provide personalized job recommendations for job seekers.

Criticalview :

❑ Beyond logistic regression and use other L2R models as the predictionmodel in the proposed clustering-prediction process.

❑ Consequently, the proposed models would become pair wise or list wise PCP instead of point wise PCP presented in this paper.

❑ The proposed approach can also be applied to other recommendation tasks in which the data presentsmultimodality behaviors.

❑ Another research direction is to develop more personalization features such as dwell time, query reformulation, and the sequence of clicks, which can be aggregated and exploited in personalized job recommendation.

Journal 8

Authors: J. Malinowski, T. Keim, O. Wendtand T. Weitzel **Title:** Matching People and Jobs :ABilateral Recommendation Approach

Publisher: IEEE

Abstract: Theory shows that a good match between persons and jobs needs to considered both, the preferences of the recruiter and the preferences of the candidate. Based on this requirement for modeling bilateral selection, decisions they present an approach applying to distinct recommendation systems to the field inorder to improve the match between people and jobs.

Criticalview :

❑ It does not include additional test runs and validation activities.

❑ The system to the field of interpersonalrelations thus building a relational recommended that would be applicable not only to recruiting but also to team configuration scenarios.

Journal 9

Authors: Kuan Liu, Xing Shi,Anoop Kumar, Linhong Zhu Prem Natarajan

Title: Temporal Learning and Sequence Modeling for a Job

RecommenderSystem

Abstract: They present their solution to the job recommendation task for RecSys Challenge 2016. The main contribution of their work is to combine temporal learning with sequence modeling to capture complex user item activity patterns to improve job recommendations.

Criticalview :

❑ To extend the research in model designs.

❑ e.g. to incorporate features in the output layer and to support other loss functions.

❑ In result analysis to understand why and when the sequence modeling really helps recommendation.

Journal 10

Authors: I.Paparrizos, B. Cambazoglu and A. Gionis **Title:**Machine Learned Job Recommendation.

Publisher: Associationfor ComputingMachinery New York, NY, United States

Year of Publication: October2011

DOI: https://doi.org/10.1145/2043932.2043994

Abstract : They address the problem of recommending suitable jobs to people who are seeking a new job . They formulate this recommendation problem as a supervised machine learning problem our technique exploits all passed job transmission as well as the data associated with employees and institutions to predict an employees next job transitions.

Criticalview :

❑ To extend their work with more features and compare it against strongerbase lines.

❑ We also intended to study the influence of social aspects.

❑ In particular , to build models that exploit the job transition patterns of the people in the social circle of an employee.

Hardware& Software Requirements

System Required:

8GB RAM, Intel Core i3, OS-Windows/Linux/MAC , Laptop or Desktop

SoftwareRequired:

Python, Flask , Docker

Thank You!