Project id   : PNT2022TMID38755

Team leader   : Praveen S

Team members   : Akash S

                          Divahar D

                          Selvakumar V

Project title   : Skill and Job Recommender

LITERATURE SURVEY

Paper 1:

Title	: Recommender Systems Challenges and Solutions Survey
Author	: Marwa Hussien Mohamed, Mohamed Helmy Khafagy, Mohamed Hasan Ibrahim.
Journal	: International Conference on Innovative Trends in Computer Engineering (ITCE'2019), Aswan, Egypt, 2-4 February 2019
Methodology	: Data mining methods with recommender systems.
Scope	: In this paper, they discuss four techniques in recommender systems and list advantages and disadvantages for everyone. Discuses recommender system challenges: like, cold start, scalability, privacy, gray sheep, Shilling attack, and novelty, Sparsity, Diversity, over specialization problem. Also, discusses some research topics solutions used to overcome challenges and their advantages.

Paper 2:

Title	: Cost-Effective and Interpretable Job Skill Recommendation with Deep Reinforcement Learning
Author	: Ying Sun1,2,3† , Fuzhen Zhuang1,3∗ , Hengshu Zhu2∗ , Qing He1,3 , Hui Xiong4
Journal	: This paper is published under the Creative Commons Attribution 4.0 International (CC-BY 4.0) license. WWW '21, April 19–23, 2021
Methodology	: Reinforcement Learning based Recommender Systems
Scope	: In this paper, they introduced a new research problem, namely sustainable job skill recommendation, which aims to provide longsighted, cost-effective, and explainable recommendations for talents who want to learn new job skills. To address this problem, they proposed a data-driven recommendation system based on the technology of deep

reinforcement learning. Based on the environment, they specially designed a novel Skill Recommendation Deep Q-Network (SRDQN) with multi-task structure to estimate the long-term skill learning utilities. In particular, SRDQN can recommend job skills in a personalized and cost-efficient manner, which helps talents to gain more salary while pay less learning efforts considering their owned skills.

Paper 3:

Title	: A survey of job recommender systems
Author	: Shaha T. Al-Otaibi1 * and Mourad Ykhlef2
Journal	: International Journal of the Physical Sciences Vol. 7(29), pp. 5127-5142, 26 July, 2012
Methodology	: Boolean search methods
Scope	: In this work, They analyzed a variety of publications and proceedings that were relevant to the hiring procedure and job recommendation studies. The issues that the comprehensive e-recruiting platforms faced and our examination of the literature have shown us the increased necessity for improving candidate quality and job matching. The recommender system technologies have achieved notable success in a variety of applications and may one day lead to effective searching and recommending methods. As a result, there is a significant possibility to use these technologies in the recruitment environment to enhance the quality of matching. This survey demonstrates that various methods for job recommendation have been put out, and numerous ways have been integrated to provide the optimum match between positions and applicants.

Paper 4:

Title	: Development of an Intelligent Job Recommender System for Freelancers using Client's Feedback Classification and Association Rule Mining Techniques
Author	: Md. Sabir Hossain, Mohammad Shamsul Arefin*
Journal	: Manuscript submitted March 14, 2019; accepted May 22, 2019.
Methodology	: Logistic Regression and Linear Support Vector Machine

Scope   : In this article, they provide an intelligent approach to suggest suitable freelance work to freelancers from several online marketplaces. In order to categories the listed tasks as favourable or bad, they have gathered client input and trained our classification model using logistic regression and a linear support vector machine model. The metric cross-validation shows that linear SMV performs better than logistic regression. Then, using the Apriori association rule mining technique, frequently used skill sets by freelancers are identified. These frequently used skill sets are compared to the skill sets needed in the offered jobs to produce a potential job list for the freelancers. Finally, a filtering system suggests suitable employment.

Paper 5:

Title   : Semantic matching of job seeker to vacancy

Author   : Sisay Adugna Chala, Fazel Ansari, Madjid Fathi, Kea Tijdens

Journal   : International Journal of Manpower Vol. 39 No. 8, 2018

Methodology   : machine learning techniques for bidirectional matching of job vacancies

Scope   : The paper discusses the general framework of online occupational recommender system that utilizes bidirectional matching, occupational analysis method, to improve the accuracy of job matching to job seekers and enrich the quality of recommendations to job seekers and recruiters as well as job designers. It also explored the importance of occupational standards and social networking data in the jobseeker-to-vacancy matching in online recruitment systems and presents an Industry 4.0 use case scenario to showcase the trends in job demands and jobseeker interests with promising insights.

Paper 6:

Title   : Job Seekers' Perceptions and Employment Prospects: Heterogeneity, Duration Dependence and Bias

Author   : Andreas I. Mueller, Johannes Spinnewijn, Giorgio Topa

Journal   : National Bureau of Economic Research 1050 Massachusetts Avenue
                   Cambridge, MA 02138 November 2018

Methodology   : Heterogeneity and Duration Dependence

Scope   : This paper analyzes job seekers' perceptions about their employment
                   prospects and how these perceptions relate to employment outcomes.
                   They have offered three sets of results: They have documented
                   empirically (1) that reported beliefs have strong predictive power for
                   actual job finding, (2) that job seekers are over-optimistic in their beliefs,
                   particularly the long-term unemployed, and (3) that job seekers do not
                   revise their beliefs downward when remaining unemployed. They have
                   then developed a novel framework, where they show how the relation
                   between beliefs and ex-post realizations can be used to disentangle
                   heterogeneity and duration dependence in true job finding rates.