Skill and Job Recommender

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LITERATURE SURVEY

TITLE	Cost-Effective and Interpretable Job Skill Recommendation with Deep Reinforcement Learning
AUTHORS	Ying Sun, Fuzhen Zhuang, Hengshu Zhu, Qing He, Hui Xiong
YEAR OF PUBLICATION	April 2021
ABSTRACT	Nowadays, as organizations operate in very fast-paced and competitive environments, workforce has to be agile and adaptable to regularly learning new job skills. However, it is nontrivial for talents to know which skills to develop at each working stage. To this end, in this paper, we aim to develop a cost-effective recommendation system based on deep reinforcement learning, which can provide personalized and interpretable job skill recommendation for each talent. Specifically, we first design an environment to estimate the utilities of skill learning by mining the massive job advertisement data, which includes a skill-matching-based salary estimator and a frequent itemset-based learning difficulty estimator. Based on the environment, we design a Skill Recommendation Deep Q-Network (SRDQN) with multi-task structure to estimate the long-term skill learning utilities. In particular, SRDQN recommends job skills in a personalized and cost-effective manner; that is, the talents will only learn the recommended necessary skills for achieving their career goals. Finally, extensive experiments on a real-world dataset clearly validate the effectiveness and interpretability of our approach.
METHODOLOGY	Data Mining and Deep reinforcement learning
MERITS	Cost effective
DEMERITS	Must improve the performance for potential application such as curriculum recommendation
OVERCOME DEMERITS	Using CNN for comparable profile to be more potential
LINK	https://doi.org/10.1145/3442381.3449985

TITLE	Prediction of recommendations for employment utilizing machine learning procedures and geo-area based recommender framework
AUTHORS	Binny Parida, Prashanta Kumar Patra, Sthitapragyan Mohanty
YEAR OF PUBLICATION	19 November 2021
ABSTRACT	With increment in the utilization of Internet, the pace of increment of social networks is getting ubiquitous in recent years. This paper focuses on the job portal websites. The research objective of this paper is that the recommender framework takes the abilities from the website and makes suggestion to the candidates with the jobs whose descriptions are coordinating with their profiles the most. This paper additionally presents a short presentation on recommender framework and talks about different categories of this framework. From the start, information is cleaned by expelling the filthy information as extra space and duplicates. Then the job recommendations are made to the target applicants on the basis of their preferences. It utilizes different Machine Learning procedures which results show that Random Forest Classifier (RFC) gives the most noteworthy expectation accuracy when contrasted with different procedures. Finally, the optimization technique is utilized to get the most exact outcome. The advantage of recommender framework in career orientation is expressed. Geo-area based recommendation framework is utilized to find the organization's position which can assist the ideal applicants with reaching their destination. This examination shows that the utilization of job recommender system can assist with improving the recommendation of appropriate employment for work searchers
METHODOLOGY	Machine Learning

MERITS	Comparing multiple algorithms.
DEMERITS	Doesn’t find for all the close by location organization
OVERCOME DEMERITS	Using Nearest Neighbor algorithm can suggest a close by location organization.
LINK	https://doi.org/10.1016/j.susoc.2021.11.001

TITLE	A Personalized Brand Proposal Based on User's Satisfaction and Curriculum Supported by an Intelligent Job Recommender System
AUTHORS	Patricia Rayón Villela , Nelly Rigaud Téllez
YEAR OF PUBLICATION	25 July 2021
ABSTRACT	One of the main challenges' universities are confronted is the personalization of education services to improve quality mechanisms and strategies for supporting and assisting students when entering the workforce. Although many universities try to narrow the gap between academic life and job market, it is a highly challenging task to identify the right job for the right graduate. Market strives to find the most talented people and universities attempt to enrich students' personal brands, but these do not always align. Pitfalls are found in obtaining proper information that harmonize employment offers, course content and graduate's profile. This research places a transversal analysis of job mismatch in Latin American (LATAM) countries, builds a personalized brand based on satisfaction and course content and offers descriptions for an intelligent job recommender system. Proposal considers that providing a targeted job match implies by picking quantitatively relevant technical knowledge and transversal competencies of individual graduates and matching them to knowledge, skills and attitudes of employment offers and course content, in an efficient manner. Competencies from employment offers obtained with text mining are related to those from a current curriculum to help graduates bring about a personal brand for an appropriate job. Contribution of this research is the construction of a framework to construct match patterns that benefits graduates to

	meet professional success and to achieve personalization and optimization of the universities' offered services that represents an incremental improvement.
METHODOLOGY	Data Mining
MERITS	High Accuracy
DEMERITS	Doesn't have the support for the geo based search
OVERCOME DEMERITS	Using machine learning and deep learning
LINK	10.1007/978-981-16-3941-8_12

TITLE	Embedding-based Recommender System for Job to Candidate

	Matching on Scale
AUTHORS	Jing Zhao, Jingya Wang, Madhav Sigdel, Bopeng Zhang, Phuong Hoang, Mengshu Liu and Mohammed Korayem
YEAR OF PUBLICATION	1 July 2021
ABSTRACT	The online recruitment matching system has been the core technology and service platform in CareerBuilder. One of the major challenges in an online recruitment scenario is to provide good matches between job posts and candidates using a recommender system on the scale. In this paper, we discussed the techniques for applying an embedding-based recommender system for the large scale of job to candidates matching. To learn the comprehensive and effective embedding for job posts and candidates, we have constructed a fused-embedding via different levels of representation learning from raw text, semantic entities and location information. The clusters of fused-embedding of job and candidates are then used to build and train the Faiss index that supports runtime approximate nearest neighbor search for candidate retrieval. After the first stage of candidate retrieval, a second stage reranking model that utilizes other contextual information was used to generate the final matching result. Both offline and online evaluation results indicate a significant improvement of our proposed two-staged embedding based system in terms of click-through rate (CTR), quality and normalized discounted accumulated gain (nDCG), compared to those obtained from our baseline system. We further described the deployment of the system that supports the million-scale job and candidate matching process at CareerBuilder. The overall improvement of our job to candidate matching system has demonstrated its feasibility and scalability

	at a major online recruitment site.
METHODOLOGY	Deep learning
MERITS	High Accuracy
DEMERITS	Didn’t compared with many algorithms.
OVERCOME DEMERITS	Compare more models with the same data.
LINK	https://doi.org/10.48550/arXiv.2107.00221

TITLE	Job Recommendation based on Job Profile Clustering and Job Seeker behaviour.

AUTHORS	D. Mhamdi*, R. Moulouki, M. Y. El Ghoumari, M. Azzouazi, L. Moussaid
YEAR OF PUBLICATION	August 2020
ABSTRACT	This article presents a recommender system that aims to help job seekers to find suitable jobs. First, job offers are collected from job search websites then they are prepared to extract meaningful attributes such as job titles and technical skills. Job offers with common features are grouped into clusters. As job seeker like one job belonging to a cluster, he will probably find other jobs in that cluster that he will like as well. A list of top n recommendations is suggested after matching data from job clusters and job seeker behavior, which consists on user interactions such as applications, likes and rating
METHODOLOGY	Clustering and Artificial Intelligence
MERITS	Good Accuracy
DEMERITS	Doesn't find perfect job with the required user skill
OVERCOME DEMERITS	using Word2vec method and k-means clustering algorithms used to capture and represent the context of job profiles
LINK	https://doi.org/10.1016/j.procs.2020.07.102