Selection of Prospective Workers Using Profile Matching Algorithm on Crowdsourcing Platform

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***Abstract*—The use of a crowdsourcing platform is an option to get workers who will help complete the work. Crowdsourcing is the process of gathering work, information, or opinions from a large number of individuals using the internet, social media, or smartphone apps. Whether crowdsourcing is used for programming, design, content creation, or any other task, requesters are putting their trust in individuals who are unfamiliar with their knowledge and have unknown histories and skills. Requesters do not have the time or resources to screen all of the crowd's qualities, unlike employing full-time personnel. In this study, we try to minimize the risks faced by requesters when using a crowdsourcing platform to complete their work, namely by increasing the match between the profile of workers and the jobs offered on the crowdsourcing platform. The researcher implemented the profile matching method using a dataset consisting of several fields that became the criteria for finding a match. The criteria used to find a match between workers and the work offered consist of two parts, core factors and secondary factors. Core Factor Criteria as skill, designation, location, and the secondary factor is the number of years of work experience. These criteria become variables that are used in the profile matching algorithm to find workers who best match the profiles offered. This algorithm is able to select worker profiles from 10,000 datasets, up to 1148 people who are most suitable for the tasks offered. And the results obtained indicate an increase in the match between workers and the needs of the work offered by the requester.**

Keywords— crowdsourcing, profile matching, worker

I. Introduction

Crowdsourcing activity has become an option for completing a job. Crowdsourcing can increase productivity by offering and providing work to the public through digital facilities and the internet [1]. Crowdsourcing is a method of obtaining needed services, ideas, or content through open solicitation in online communities, which is faster and less expensive [2]. Human workers are used in crowdsourcing to solve problems that are usually difficult for machines to solve [3]. Human workers in crowdsourcing have a wide range of abilities. The majority of workers are diverse, and the majority of workers may lack the information that data owners desire [4].

Workers with low quality or not according to job specifications can affect the outcome of jobs offered on crowdsourcing platforms. Some of the problems in collecting data from workers are as follows data received from workers have a high potential not as needed for jobs because there has been no selection of workers [5]. Unsuitable workers involved in crowdsourcing activities provide low-quality data [6]. Matching crowd workers to suitable tasks is highly desirable as it can enhance task performance, reduce the cost for requesters, and increase worker satisfaction [7]. Still, many tasks do not match the workers [8]. The validation process for workers is essential because, with the invalidity of the worker [9], the data in the database for further processing will be vulnerable to errors [10]. The selection of workers is one of the quality assurances that companies or organizations that involve others in the data collection process must be met [11].

Worker Selections is a method of precisely managing how a job registry and a job candidate are properly put together. The selection of workers in crowdsourcing requires a certain effort. This is done to improve the match between workers and the skills needed. Researchers try to use the profile matching technique to get worker recommendations that match the needs of the task. In general, the job matching technique looks at the information in the resume and compares it to the information in the list of open positions. One of the most difficult aspects of this type of job matching is that there is usually a lot of data to coordinate with [12]. In this study, the author tries to apply a profile matching algorithm to determine prospective workers according to job requirements and needs. It is expected that the implementation of profile matching can improve the quality of work results because workers are following their needs.

II. Method and Data

A. Data

As raw material for model testing, researchers used datasets from Kaggle. In addition to many datasets, Kaggle also offers a cloud-based data science platform [13]. The dataset has 10,000 rows of data with the following fetched fields. `id,` `region,` `employeecode,` `lastname,` `datejoin,` `yearjoin,` `Designation,` `Status,` `MarketUnit,` `Skill,` `location.` This dataset was chosen because year-join components and skills will be the core and secondary factors.

B. Method

The method applied in this study is depicted in a framework as displayed in the following Fig. 1. Profile Matching determines the ranking of candidates. In the ranking (rank) of the candidate, it is necessary to calculate the matching profile. The result of this profile matching process is ranking candidates who are sure to fill job vacancies that match their abilities and work experience. The following is the procedure for the Profile Matching method: