

# Smart Human Resource Recruitment System

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Abstract Human resource is one of the most valuable assets in an organization. They are bounded to develop the unique and dynamic aspects that strengthen their competitive advantage to persist in an always changing market environment. In order to recruit a quality candidate for an organization, reducing human involvement and verifying details of the candidate is important in recruitment process. Furthermore, having an idea about how well or poor the employees perform, and how likely the employee attrition can occur is vital in human resource management process. This project is an attempt to introduce smart human resource management system that can maximize the productivity of an organizational environment using machine learning and blockchain technologies. The end goal of this research is a smart human resource management system that reduces human judgment, time in the candidate selection process and predicts employee performance and attrition to motivate current employers to maximize productivity with minimal financial loss in the workplace environment. Skill assessment and resume classification have been done using unsupervised learning algorithms and natural language processing after extracting raw data from employee resumes using Object Character Recognition. Candidate details verification is done by comparing the hashes of the records which are stored in the block chain. Employee performance and attrition are predicted using supervised machine learning classification techniques with high accuracy and the result of the final performance is generated as a score for each employee considering The multiple attributes that has been standardized and regulated by some specifically considered e-competence frameworks. Education systems monitor student learning to provide some answers to these questions. Comparative international analyses can extend and enrich the national picture by establishing the levels of performance being achieved by students in other countries and by providing a larger context within which to interpret national results. They can provide direction for schools' instructional efforts and for students' learning as well as insights into curriculum strengths and weaknesses.

**Keywords** — *Machine Learning, Blockchain, LDA, Human Resource Management, Recruitment, Maximizing*

## I. INTRODUCTION

Human resources are one of the most valuable assets in an organization. They are bound to develop the unique and dynamic aspects that strengthen their competitive advantage to persist in an always changing market environment. In order to recruit a quality candidate for an organization, reducing human involvement and verifying details of the candidate is important in the recruitment process. Furthermore, having an idea about how well or poorly the employees perform, and how likely the employee attrition can occur is vital in the human resource management process.

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and for students' learning as well as insights into curriculum strengths and weaknesses. It might have happened with many of the teachers\lecturers that they are teaching something and the students are not listening or they are not interested in that particular topic or they are responding to the teacher if they ask any questions in the class, this may result in students' poor performance in the exam or in future anywhere. It might also happen that a therapist or a psychiatrist feel like if they could know what is the current mind state or mood of the patient, in this way they could conduct a better therapy session. This gave us the idea of preparing this project idea and making it possible to be able to know that if the students are attentive in the lecture or if the patients are satisfied by the psychiatrist's advice to apply in life

In the academic literature, engagement has been conceptualized based on the dominant framework of job-demand-resource (JD-R) model proposed by Bakker and Demerouti (2007). This model explained employee engagement based on job and personal related resources.

Authors (Bakker & Demerouti, 2007) incorporated physical, organizational, and social aspects of a job that could help to reduce job related demands and different physiological or psychological costs; give opportunity for learning and internal growth; and help to attain work objectives (de Lange et al., 2008). The JD-R model is a very influential framework to establish the antecedents and consequences of employee engagement. However, JD-R model cannot explain the varying level of engagement among employees, and thus, research gaps still remain that needs to be addressed. For example, Saks (2006) argued that the more theoretical foundation has been found to explain employee engagement in the reciprocal norms of social exchange theory (SET), that describes the mutual relationship between two parties (Presbitero, 2017; Karatepe, 2011). Therefore, this study develops the framework to explain the relationship between HRM practices, POS and employee engagement under the tenet of SET. Figure 1 shows the research framework accompanied by hypothesized relationship.

## II. RELATED WORK

### Reference paper

Smart Human Resource Management System to Maximize Productivity

### Year- 2020

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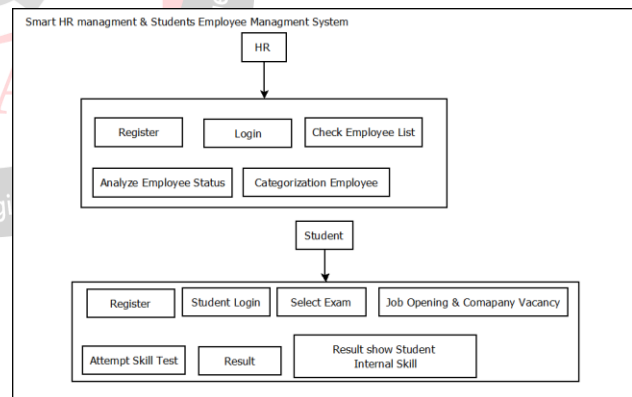
Data analysis and knowledge discovery in web recruitment—based on big data related jobs

### Year-2019

This paper proposed a convolutional neural network (CNN) based deep learning architecture for emotion detection from images. This paper mines and analyzes the post information of the online recruitment data, and discovers the knowledge in large-scale web data, so as to achieve the precise connection between professional job demand and supply. First, internet crawler technology is adopted to acquire data. Second, the authors digitalize polymorphic data and conduct Chinese word segmentation, stop word filtering and other operations on data records. Third, the cosine similarity is used to measure the similarity of the vector, and the K-means++ is used for post clustering. Then, latent dirichlet allocation and apriori are used for post correlation analysis. Last, the authors use auto-encoder to achieve job matching recommendation.

## III. PROBLEM FORMULATION

Human resources are one of the most valuable assets in an organization. They are bound to develop the unique and dynamic aspects that strengthen their competitive advantage to persist in an always changing market environment. Many education systems monitor student learning to provide some answers to these questions. Comparative international analyses can extend and enrich the national picture by establishing the levels of performance being achieved by students in other countries and by providing a larger context within which to interpret national results. System Architecture:



Following figure 1 shows the architecture of the system.

This system works on temporal data to mine frequent itemset. 1. Register Here HR can register and user info will be encrypting using block chain here on portal.

### 2. Login

Login Here

### 3. Check Employee List.

HR Can check employee list.

### 4. Analyze Employee status

-HR can analyze employee data so this can getting skill employee.

### 5. Categorization Employee

-HR can analyze employee data so this can getting category of employee.

### Student Module

#### 1. Student Register

Here Student can register and user info will be encrypting using blockchain here on portal.

#### 2. Login

Login Here

#### 3. Select Exam.

Student Can select exam.

#### 4. Check Job opening and company vacancy

-Student can check companies.

#### 5. Attempt Skill Test

#### 6. Result show Internal Skill.

## IV. ALGORITHM

### Algorithm 1: mining Large1 itemsets

Input: Database -D, Minimum support-sup, Min density-den, Basic Time Cube-BTC

Output: Large 1 itemset L

Processing:

1. For all items in X
2. For all items in time cube D-BTC  
Calculate support of X
3. For all BTC
4. If(support (X-BTC)  $\geq$  sup and D-BTC-Density  $\geq$  den then
5. Update Time cube TC with BTC
6. Add item X in large 1 itemset L
7. Else merge time cube with next time cube
8. Return L with TC

### Algorithm 2: candidate generation

Input: Large 1 item set L

Output: Candidate items set C-set

Processing:

1. Generate items pairs in L as Li, Lj
2. For all pairs of L
3. Apply join operation over Li and Lj
4. If candidate length is K then
5. add candidate in C-set
6. return C-set

## V. CONCLUSION

Implementing Smart Human Resource Management System as well as achieving above mentioned objectives through the system are met successfully. The proposed

model on Employee Performance aids decision-makers and HRM to take instantaneous decisions about the employees for the growth of the organization as it focuses on the capabilities of employees and generating a rating-based analysis on their performance. As future dimensions, to extract data from employee resumes, a NER approach would work much better than a rule-based approach if can get a labeled resume data set suitable for the company. Big companies with many employees would benefit very well with such an approach. However, rule-based approach still works best for smaller companies with a smaller set of resumes if resumes contain relevant.

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