

## GROUP MEMBERS

1. Mkhonta Thembinkosi T – 202003592
2. Msibi Samkelo – 202003077
3. Nxumalo Neliswa – 202004212
4. Mndzebele Mongi – 202002370
5. Ngwenya Senanile - 202002008

# JOB ANALYSIS AND PREDICTION WEB SYSTEM USING MACHINE LEARNING IN ESWATINI

## **1. Background and Motivation**

With the increasing complexity and industrialization of society, work for many people has become more and more simply, a means toward the end of earning a living (Morse et al 1995). A job is every human being's necessity in this modern era as having a job concludes to have the basic needs and most necessities in order to survive. More than that, a job serves other functions than the one of earning a living. For some people, working gives them a feeling of being tied into the larger society, of having something to do, of having purpose in life. However, jobs are not easy to find these days compared to the past century. This predicament is faced by both literate and illiterate individuals and the major cause of this is that most individuals possess job skills that are absolute hence we are going to develop a Job Analysis and Prediction system using Machine Learning to assist various individuals in gathering insight about jobs and skills that are currently in the move and making them available to the public to help identify these skills in demand.

## **2. Problem Statement**

While economists and academics make convincing arguments that a certain natural level of unemployment cannot be erased, elevated unemployment imposes high costs on the individual, society, and the country (Simpson et al, 2022). Unemployment has costs to a society that are more than just financial meaning. For example, students go to university for an extended period of time in hopes of graduating and having a better future but what happens is when the eventually graduate and come out to the real world in search of job opportunities, their hopes are shattered into pieces as most find it difficult to find jobs with go with their skills, worse even find themselves unemployed yet for another extended period of time. This has a very negative toll on the persons' mental health and also physical health (Linn et al, 1985). He further stated that symptoms of somatization, depression, and anxiety were significantly greater in the unemployed than employed. In the long run, unemployment becomes too much for people to handle and this can increase the number of suicides. Not only does unemployment have an effect on the society but also on the economy as well (Simpson et al, 2022). Prolonged unemployment may lead to an erosion of skills, basically robbing the economy of otherwise useful talents. Also, the absence of income created by unemployment can force families to deny educational opportunities to their children and deprive the economy of those future skills. A high unemployment rate affects the economy in many ways. Unemployed people tend to spend less, may accrue more debt, and unemployment may lead to higher payments from state and federal governments for things like food stamps. Unemployed people can also rely on crime and theft in order to survive which means crime rates in the country also increase.

### 3. Methodology

Implementing this system will consist of a various step that range from model development to web system. The model creating will done on anaconda environment using Jupiter. The programming language that will be used is python version 3.8.

The **Cross Industry Standard Process for Data Mining (CRISP-DM)** process model will be used to analyse the data and construct the prediction model. The CRISP-DM process model consists of the following steps:

#### Business Understanding

The phases focuses on clearly understanding the requirements and objectives of the developed model. It is where Determine business objectives, asses if resources are available for completing model, determining the data mining goals and creating a project plan.

#### Data Understanding

This is the where data collection will occur and foe this project data collection will done online. The data exploration of where attributes will be determined, data description will occur and data quality confirmation will occur.

#### Data Preparation

This is the stage where data cleaning and pre –processing will occur. This stage will ensure that the data will ensure that it is in the appropriate format to be used on the model. Data will also be split in to the training set and testing sets. This will have to be done according to the requirements of the proposed model.

#### Modelling

Here a modelling technique will be chosen then built. assessing the operation and per

#### Evaluation

Here the results of the model shall be evaluated and the whole process reviewed as to if it was don

#### Deployment

Based on the mined data a prediction system shall be built. A simple user interface shall be built to test in functionality and if its function according to requirements the model system shall the be transformed into a web page using tools such as flask. The web page programming shall be done using python for operations, HTML for page structure and cascading style sheets for better user experience and styling the web page.

### 4. Significance of the project

Since unemployment rate is climbing, this is not a good thing on the economy as there's decrease in economic growth, there's also escalation in poverty and decrease in life expectancy due to depression and stress as a result of unemployment. The success of this project can address the challenges outlined above in the sense that people can use the developed system to find current patterns and trends pertaining jobs and skills that have a

high demand curve in modern and future times. Knowing this information can aid the various individuals by making them aware of the skills they need to attain and in demand thus increasing their eligibility in getting employed therefore decreasing the unemployment rate.

## **5. References**

1. Linn, M., Sandifer, R., & Stein, S. (1985). Effects of unemployment on mental and physical health. *American Journal Of Public Health*, 75(5), 502-506. doi: 10.2105/ajph.75.5.502
2. The Cost of Unemployment to the Economy. (2022). Retrieved 29 September 2022, from <https://www.investopedia.com/financial-edge/0811/the-cost-of-unemployment-to-the-economy.aspx#citation-12>
3. Berglund, B., Hassmén, P., & Job, R. S. (1996). Sources and effects of low-frequency noise. *The Journal of the Acoustical Society of America*, 99(5), 2985-3002.