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Interface Between Employee and Employer Based on Android App Development

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Abstract: The application E^2I is a proposed solution for the improvement of the livelihood of people residing in rural and semi-urban areas through a simple mobile application which would help them to work very low skilled jobs when they are unemployed as most of them are considered to be seasonal workers such as laborers in agricultural farms, etc. With the increasing job search portal, segmenting the online labor market into "information islands", make it difficult for job seekers to get an overview of all relevant positions. The application mainly focuses on the small-scale manufacturing units and for the people who are dependent on seasonal jobs for income. It provides a rotation of jobs for multi-skilled laborers saving them time and providing extra wages. This application provides a simple user interface for people with low knowledge of software and other applications. This application provides support to users who haven't got even the basic exposure of technologies such as smart phones through agencies which sign-up with the application and can co-ordinate the users (employees) to their required destination and work details along with which the agencies will receive a part of the wage as a commission for their support. Therefore, we are not getting the job vacancies and also about the nature and status of the employer. Also, it is difficult to know the salary of existing employee salary information and also rating of the company by the existing or past employee in terms of salary and so. In case there is a requirement for either of the main users (employees or the employers) for the materials required for the work, it can be obtained from the vendors who are also signed up with the application who provide the required materials on a rental basis and the wages are fixed by the vendors themselves and are non-negotiable. It provides transparent details about the details such as location, time and wages wrt both users, i.e., employers and employees. This system is a qualification independent and employment will be based on skills and previous experiences of the employee and according to the algorithm without any bias.

INTRODUCTION

The unemployment rate has been a major setback for the growth of the Indian economy heavily due to the people residing in rural areas with low skills and very less exposure to infrastructural development. The employment of rural residing people can be increased by exploring the advancement of the 'Digital World'. According to statistical data, the percentage of sick units (SSI) has increased due to labour problems, lack of demand, marketing problems and also equipment problems, hence, improving it through this application. The main thrust area of this project is data science; this multi-disciplinary field is used to study different kinds of unorganized data and processes quite a few algorithms for connecting the dots between multiple interfaces. E^2I aims to provide job opportunities 365 days on a 24/7 h basis to all the unemployed people with a user-friendly working environment. The objective of this project is to model all of the unorganized data of small-scale working environment within the sphere of an organized database.

Literature review: Now a days, there are applications that help people recruit employees on short term basis for skilled jobs (Plumbing, electrician, hairstylist) mostly in urban areas and have not been implied into action except for very few and major cities of this country. Applications such as Urbanclap, etc., help people with jobs cited above and don't work in rural areas[1]. Since, this project concentrates almost completely in rural areas of this country and also for people who depend on seasonal jobs and aren't well educated and exposed to other systems, it will have a bigger impact on both people and their livelihood. Recruitment process can be a daunting task for appropriate employees with no matter of their experience level in today's world. The job searching involves a search in job websites, newspapers, Consultancy etc to identify an opportunities that is perceived compatible to abilities, anticipated remuneration and social needs. With the goal of better understanding the ways in which users pursue their search goals following the issue of each query. Of particular interest are the patterns of job summary viewing and click-through behaviors that arise and the differences in activity between mobile/tablet-based users[2] (Android/iOS) and computer-based users. However, most do very little to monitor employers against workers or even seek to check the validity of the data that prospective employees submitted. There is also no detail on the employer's input on various conditions requested by employees. The proposed solution would include developing a applicant, job search and employer agents who would use fuzzy preference rules to make a proper decision to obtain a list of jobs based on the search requirements of the consumer and also feed the employer's rating based on input from past and current employees that is special and first of its kind. To make the interface intuitive for illiterate people, it encompasses voice, icon, pictography, minimal number of text in native language and the like. It is an unambiguous application intending to provide jobs to unemployed people of this nation without any bias.

There are applications which are very similar to the proposed project. A major example is urban clap which is well known for the services it provides in India and it is explained in[3-5]. This application mainly focuses on the urban areas of India and provides a varied variety of high-end services which accomplishes it's goal to provide services and to employ people related to the jobs. It hasn't been completely implemented throughout the country and doesn't focus even in semi-urban areas of India.

MATERIALS AND METHODS

Proposed system: The proposed system intends on using a varied usage of technologies such as geo-location and application development tools. This application obtains input from both users, i.e., the employer and the employee and stores them in a secure database. This information is shared and exchanged to people who are present in a pre-programmed radius of both the employee and the employer. The specifications of both parties can be filtered and the user interface will provide the list of exchanged data to both the parties. This application also obtains input from the users for reviews based on conduct and the performance of their work. These reviews will be used for the listing of employees and employers on the user-interface and also for future references. As this application is focused on rural areas and considering that not a lot of people have the exposure to new software system, this application provides a middle-man a.k.a "Agent" who connects the employer and the employee. It also enlists vendors who provide instruments on a rental basis. A data enabled mobile network integrated with a LAN (Local Area Network) is the required platform. This makes efficient communication between the mobile device and the multi-agent system. All agents in this application will be designed to follow a similar architecture. Although, online job search platforms have significantly improved the work selection process, difficulties remain in delivering a qualitative approach to job search, finding a position that is ideally suited for an employee. Applicant starts a cell phone work search session which can be registered users which securely login or unregistered users can search for jobs but must register and log in to apply for any work. This system also provides security through uploading government-issued documents in the applications which will be stored in the database and can be used if at all for security purposes only. The employee or the job-seekers

can select their area of interest (skills) and apply for the jobs. The user interface is user friendly and simple to use.

Software used: The main tool used for the development of this application is "Android Studio" which is the official Integrated Development Environment (IDE) for Android application development. Android Studio uses a Gradle-based build framework, emulator, code templates and integration with Github to facilitate the development of applications within the Android operating system. Every Android studio project has one or more modalities including source code and resource files. These modalities include Android app modules, library modules and Google app engine modules[6-8]. Android studio uses an Instant Push feature to transfer code and resource changes to an application running. A code editor lets developers write code and provide the completion, refraction and analysis of code. Applications built in Android studio for submission to the Google Play Store are then compiled into the APK format.

The add changes feature of android studio allows you to transfer code and resource changes to your running app without restarting your device and in some cases, without restarting the current operation. By providing advanced code completion, refactoring and code analysis, the code editor lets you write better code, work faster and be more efficient. When you type in Android studio offers a drop down list of suggestions. Mobile studio offers a comprehensive system for static analyzes and features over 365 separate lint tests across the entire device. Additionally, it provides several quick fixes that help you address issues in various categories, such as performance, security and correctness with a single click. Android studio provides scheduling, dependency management and plugins for creating customizables. You can configure your project to include local and host libraries and define variants of build that include different code and resources and apply different configurations for shrinking code and signing apps.

Android studio combines version management systems like GitHub and subversion, so, you can keep the team updated with the project and make improvements. The Gradle open source development framework lets you customize the development to your environment and run on a continuous integration server such as Jenkins. Android studio provides scheduling, dependency management and plugins for creating customizables. Android studio provides a drag-and-drop visual editor when working with XML layout files which makes it easier than ever to create a new layout. The layout editor was built in conjunction with the constraint layout API, so you can easily build a layout that adapts to different screen sizes by dragging views into place and then applying layout constraints with just a few clicks. It shows the size of each item, so you can find ways of growing the total size of the APK. It also enables you to preview packed properties, inspect DEX files to solve multidex problems and compare the differences between two APKs (Fig. 1 and Table 1).

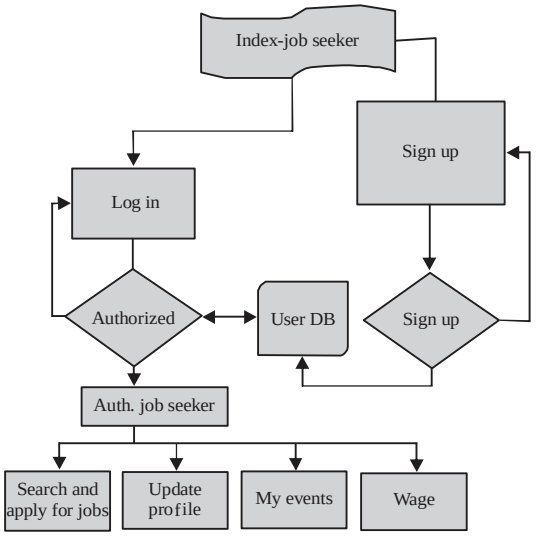

Fig. 1: Flowchart of the working priciple

Table 1: Comparative study

Features	Urban clap	House joy	E2I
Focus on agricultural and construction employment	No	No	Yes
Urban region focused	Yes	Yes	Yes
Rural region focused	No	No	Yes
Agent portal	No	No	Yes
Group recruitment	No	No	Yes
Equipment rental options	No	No	Yes

Table 2: Percentage for Domainwise

Domain	Percentage
Crop production	54
Animal production and aquaculture	29
Support activities for agriculture and forestry	5
Trading	4

Table 2 proves to show that the majority of the workers are in one or another job which is related to crop production and crop production is considered to be seasonal as it cannot be done throughout the year.

RESULTS AND DISCUSSION

Figure 2 represents the introductory page of the application and helps you choose the portal required for the user. Incase if the entry is of a new user unlike an existing user it redirects the user to the "sign-up" page. Figure 3 represents login page which is similar to other applications and can be logged in using a username and a password.

Figure 4 showcases the page after logging into the employer portal. The specific task for which the workers and required is to be chosen along with the duration from the calendar and the workplace for filtering out employees

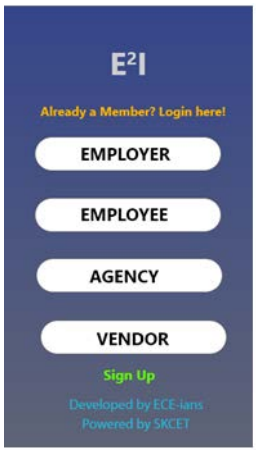

Fig. 2: Login portal

Fig. 3: Employer login

Fig. 4: Employer login portal

whose interests line up with the employers. Figure 5 is basically the list of filtered employees according to the required specifications.

Fig. 5: Employer login with filtered output

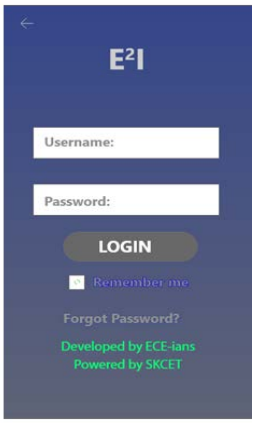

Fig. 6: Employer portal

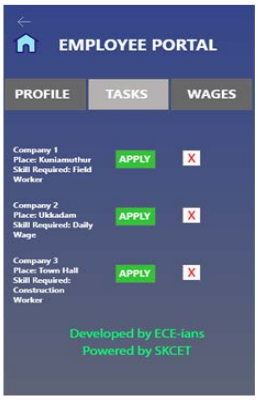

Fig. 7: Employee portal

Figure 6 represents the structured login page for the employee portal and incase the user is a new entity to the application then the user is redirected to the sign-up page. Figure 7 illustrates the list of employers and their required specifications which the employers require from Fig. 4.

Figure 8 represents the employer selection by the employee and the employee is informed if he/she is

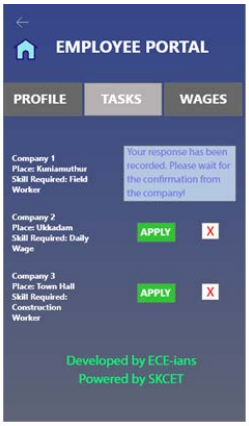

Fig. 8: Employer portal

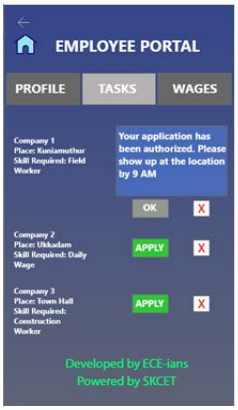

Fig. 9: Employee confirmation page

Fig. 10: Employee calendar

aligned with the employer and receives a prompt about the details ofthe workplace, date, etc. where he/she is supposed to be working which is represented in Fig. 9.

Figure 10 is an illustration of the personalized calendar of the employee through which the employer can know the availability of the employee and Fig. 11 represents the materials which the employer can rent out to the employee.

Fig. 11: Employee material

Fig. 12: Agency login

Figure 12 represents the login page for the agency and this page is similar across all the portals and the process of redirecting the new user to the sign up pages is also the same. Figure 13 represents the list of the employees who'd like to go through the agency or middle-men to the employers. These employees can be grouped together as a family may completely be into wage working, etc.

Figure 14 represents the login page of the vendor and if the vendor is a new user to the application then he/she is redirected to the sign up page which is illustrated by Figure 15.

Figure 16 represents the materials which are based on different domains such as agricultural and construction materials which can be rented out by the employers or the employees whoever maybe in need of the materials. The rates of rental charges are decided by the vendor. Figure 17 represents the list of the materials required by either parties (Employer/employee).

Figure 18 represents the sign up page for the employer with all the required credentials for the safety of either parties which also includes government issued ID's to be uploaded. Figure 19 represents the initial sign up

Fig. 13: Agency login

Fig. 14: Vendor portal

Fig. 15: Vendor signup

Fig. 16: Vendor signup

Fig. 17: Equipment

Fig. 18: Employer signup

Fig. 19: Employee signup

Fig. 20: Emplyee signup

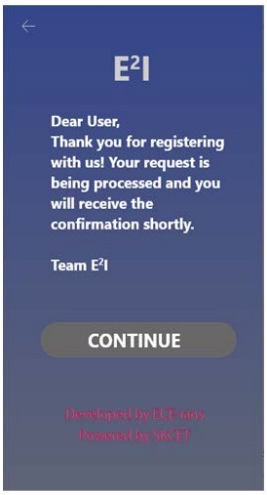

Fig. 21: Signup prompt

page for the employee which requires the information of the employee whether he intends to be represented as an individual or as a representative of a group of workers.

Figure 20 represents the sign up page for the employee where all the credentials are to be entered and Fig. 21 represents the prompt which every user receives after signing up irrespective of the user may be employer, employee, vendor or agency.

CONCLUSION

E²I (Employer-Employee) provides extensive opportunities for dexterously skilled individuals and also provides flexible time slots for executing multiple jobs per day. It improves the socio-economic background and also their mode of living. It makes things simpler by calculating the exact value of wages to be paid for employees in advance, providing a hassle-free experience for all the users. There is an active component of repetitions for data-science and there is a benefit is the organization system could help in the task to recreate easily any part of our code.

RECOMMENDATIONS

This application can be further enhanced using a technology called “Web-Scrapping” to fetch more job opportunities for our job seekers. The developed system intelligently anticipates the needs of the user and makes intelligent decisions based on fuzzy preference rules and dynamically make location, salary markup and markdown and allowances choices that are perceived beneficial to the user. In addition, the job search process could enhance the calculation of utility by including risk factors of success in choosing one job over another. This could enhance the probability of applying for the job that would be most suitable for an applicant on many levels. This is evident in the results presented in the form of scenarios and supporting screenshots. The system could be extended to include a secure application process where the applicant’s experience and education is verified possibly by including biometric data along with the job application details which has been published elsewhere. This is a technique employed to extract vlarge amounts of data from websites whereby the data is extracted and saved to a local file in your computer or to a database in table (spreadsheet) format.

Employees can view on a priority-based employee list through his/her ratings and support through the regional language will be provided using geo-location.

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