



## Smart Techie: An Online Examination System with Improved Use of Descriptive Answering

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### ABSTRACT

The modern computerized system is developed with the aim to overcome the drawback of existing system. This paper proposes a web application for Job Searching and Job Posting. The main advantage is that any person anywhere from the world can register into the site for search and find the job. The recruitment is provided on the basis of a test. The test includes questions from various categories. Based on the result of the test, recruitment will be provided for the candidates. In the case of job recruitment, the module helps in registration of the prospective candidates with the system. The candidate has to register with the site to get a login, once login is available they can attend the test. The system contains a list of companies. The test is based on Latent Semantic Analysis. In general LSA can be considered as an excellent information retrieval technique. But for this specific task Descriptive Answer Assessment (DAA) is also used. That means answers can be either objective or descriptive. In case of descriptive answers the candidate can answer either by writing or by explaining the answer in his/her own voice. LSA is mainly used for short answers and DAA for large explanations. The companies can add jobs according to the category. They can view their profile and if needed, can update the details.

**Key words:** Python, Latent Semantic Analysis, Descriptive Answer Assessment.

### 1. INTRODUCTION

The Internet has caused the largest change to the recruitment landscape in the past decade acting as a conduit between employers and job seekers. Technology has enabled corporate website suppliers and job seekers to become more sophisticated

interactive and to connect globally 24 hours a day, 7 days a week.

#### A. What is e-recruitment?

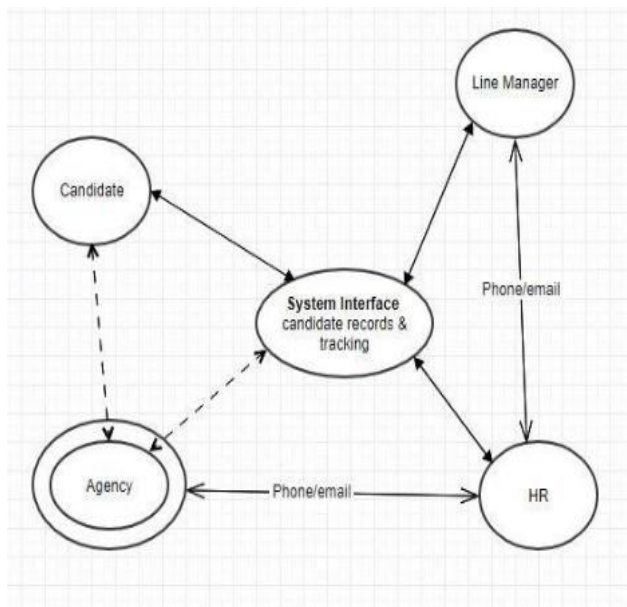
E-recruitment, also known as online recruitment, is the practice of using technology and in particular Web-based resources for tasks involved with finding, attracting, assessing, interviewing and hiring new personnel.

The purpose of e-recruitment is to make the processes involved more efficient and effective, as well as less expensive. Online recruitment can reach a larger pool of potential employees and facilitate the selection process. The online promotion of an organization as a desirable place to work, through the corporate website or other venues, is one element of e-recruitment. E-recruitment software and systems are available as standalone applications, product suites and services.

A recruitment management system is an integrated product suite or portal that streamlines and automates the processes involved. The use of websites such as LinkedIn, Facebook and Twitter for some aspects of recruitment are sometimes referred to as social recruiting.

#### B. What is LSA?

Latent Semantic Analysis (LSA) is a technique in natural language processing in particular distributional semantics of analyzing relationships between the set of documents and the terms they contain by producing the set of concepts related to the documents and terms.



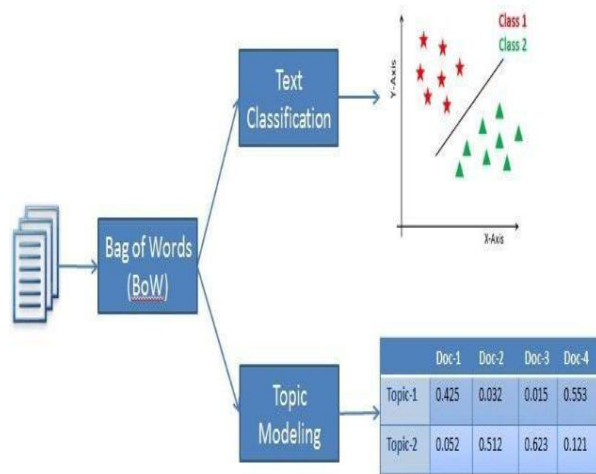
**Figure1:** Landscape of e-recruitment

In LSA, it assumes words that are close in meaning will contain in similar piece of text or the distributional hypothesis. A matrix is formed from a large piece of text and it containing the word counts per document.

A mathematical technique called Singular Value Decomposition (SVD) is used to reduce the number of rows while preserving the similarity structure among columns.

## 2. MOTIVATION

There are lots of examination portals that are operated over several servers which are used to conduct online examination for various purposes. Current online examinations mostly adopted conventional methods such as true-false, multiple choices, multiple selection and text input questions



**Figure 2:** Latent Semantics using Python

Until now, the online examination system would only deal with textual[1,2,3] answers, there was no provision for the voice based examinations. One of the most important characteristics of the proposed Web-based online examination system is its ability to assess the knowledge of the student in a particular field and to adapt to his need of getting placed in the desired job sector.

This job portal works on by, conducting online exams with the improved use of descriptive answering through the voice-based input.

## 3. LITERATURE SURVEY

A lot of studies have been done by in an attempt to provide intelligent services in the e-examination for various purposes.

In Data-driven Job Search Engine Using Skills and Company Attribute filters a framework that provides an end-to-end “Data-driven Jobs Search Engine” is presented. The objective of the paper developing e-Examination Voice interface for Visually Impaired students in Open and Distance Learning Context, is to provide a framework that will guide the development of a voice-based e-examination expert system for the visually impaired students in ODL. The paper, Job Portal - A Web Application for Geographically Distributed Multiple Clients, proposed the design of an online recruitment system that allows employers to post their job advertisements, which job seeker can refer for their use.

Interactive Items -Based Online Examination System paper focuses on finding: interactive item testing system, Web-based drawing tool, Automatic Marker. The paper, A concept of the web-based e-testing system aims at the development of a general web-based e-testing knowledge system (WbeTS) solution with ideal use of communication methods offered by the Internet.

## 4. SCOPE OF THE PROJECT

Finding the best candidates to match a set of job requirements can be viewed as both an art and a science. Smart Techie: An Online Examination System with improved use of Descriptive answering is a total online[4,5] web application, targeted to simplify the complexity of choosing a right job.

It provides the opportunity for a job seeker to search for relevant jobs based on [6,7]the person’s skill set, the desired industry space, the preferred technology stack and many other skill and company attributes. Any person anywhere in the world can register into the site for a better placement assistance.

### 5. PROBLEM STATEMENT

The existing system is a common web portal which can’t predict a particular field of job for the students. Often students cannot find the right jobs after graduation. Job seeker expectations in terms of job specifications are often different from that of company. Many new graduates, become unemployed because they do not have the job skills needed for the companies.

### 6. PROPOSED SYSTEM

Proposed model named Smart Techie: An Online Examination System with Improved Use of Descriptive Answering used for Job Searching and Job Posting. This web application will reduce the pressure of choosing a better career. It is based on Latent Semantic Analysis (LSA). LSA is a technique in natural language processing. The main advantage of the system is voice recognition.

The first step is to find out the role we needed. There are plenty of things that make[8,9] each one of us unique. Different people have different skills among them. So in order to find out our own apt role, we need to find our skill. Smart Techie helps to find out our skills too.



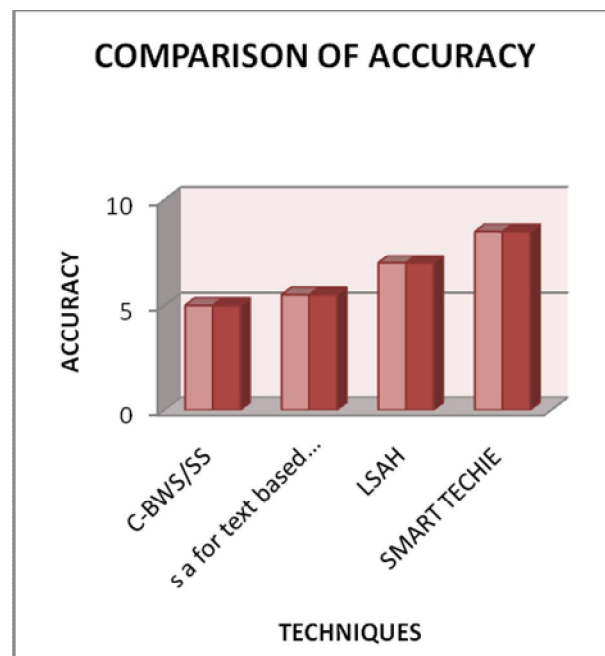
Figure 3: Block Diagram of Smart Techie

The next step is registration. In order to attend the test, we need to register for it. The admin module deals with the overall management of the site. The admin can add new jobs and company. They can also view various another features like viewing jobs that are available for the company etc. The admin have the provision to approve a newly registered company or to remove an existing company. When the admin approves the company a mail will be automatically send to the corresponding mail id.

After registration the registered [14]members can take the online test. This online test helps to find out their apt skill to choose their role. The system uses Improved Use of Descriptive Answering method using LSA. Latent Semantic Analysis can be considered as an information retrieval technique, for the task of Descriptive Answer Assessment (DAA). It consists a Vocal Answering module, which can automatically check the answer is correct or not, if the question is in descriptive mode.

Finally, based on the online test result, the students get shortlisted and are able to attend the interview process. In short our system helps the students to find out their skills and get their apt role for their career.

### 7. RESULT ANALYSIS



Smart Techie: An Online Examination System with Improved Use of Descriptive Answering used for Job

Searching and Job Posting. This web application will reduce the pressure of choosing a better career. It is based on Latent Semantic Analysis (LSA). LSA is a technique in natural language processing. The main advantage of the system is voice recognition.

We compared our model with other methods mentioned above such as C-BWS/SS, Text-based research, LSAH. Here the model we built is more accurate and efficient as the input we given will clearly predicted without any problem. Rest of the method mentioned contains old concept but have a complex process of execution. Some have used way mathematical expressions to express the result to desired one. The important one to be noted is the accuracy that each and every method is developed.

Since SMART TECHIE the model we developed has the high accuracy because of that much amount of trained and the techniques[11,12,13] used to bring us the desired result. Since using of latest technologies brings more sophisticated in developing a model and also will be very useful for the people.

**8. TESTCASES**

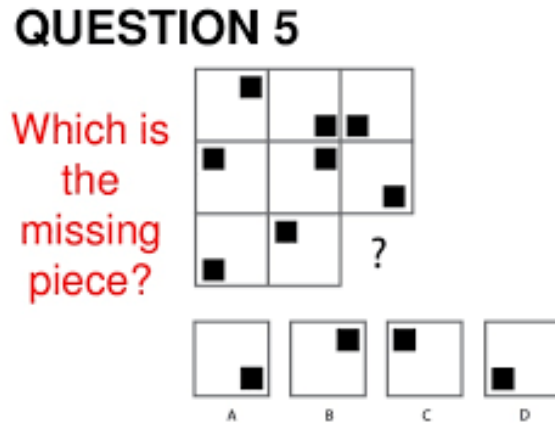
**Table 1:** Test case of SMART TECHIE

Test Id	Test Description.	Input	Expected Result
1	Quantitative	Questions	Completion and go to Next page
2	Verbal	Verbal questions	Completion and go to Next page
3	Logical Reasoning	Questions	Completion and go to Next page
4	Descriptive	Questions	Completion page

From references, it can be understandable that the system contains different levels of aptitude with a fixed amount of time. When one section is completed by the candidate it will automatically display next

section to attend the questions. Each section have time limit to attend the questions, once if the candidate is fail to complete the questions within time, then also it will directly go to next section. Candidate can answer the questions by selecting description or MCQ or answer by audio. After the completion of entire test, the completion page will be on the monitor by displaying ‘SUCESSFULLY COMPLETED’.

**9. OUTPUT OF SMART TECHIE**



**10. CONCLUSION AND FUTURESCOPE**

SMART TECHIE is a web application for a Job Searching and Job Posting. The main advantage of the system is that any person anywhere from the world can register into the site for job recruitment. The recruitment is provided on the basis of a test. The test includes questions from various categories which can be answered by bubbling or by description or by an audio as answers. Based on the result of the test, recruitment will be provided for the candidates. The candidate has to register with the site to get a login, once login is available; they can register their CV with the site and can attend the test. The system contains a list of companies.

SMART TECHIE is a total online product targeted to simplify the complexity of choosing a right job in a suitable company. The main objective is to provide placement assistance for both employees and employers.

Future scope is that to make easy to get job after attending an aptitude test. The company level will be based on the results of candidates. This system will make the job recruitment process very easy, so as to reduce the unemployment situation in the future.

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## REFERENCES

- [1] Deerwester S., Dumais S. T., Furnas G.W., Landauer T.K. and Harshman R. (1990), Indexing by latent semantic analysis, *Journal of the American Society for Information Sciences*, 41, pp. 391-407.
- [2] Gliozzo Alfio M., New York, NY (US) (2015), "Latent Semantic Analysis For Application In A Question Answer System", Patent no: US 9,020,810 B2.
- [3] E-exams in engineering education — online testing of engineering competencies: Experiences and lessons learned 978-1-5386-2957-4/18/ 2018 IEEE 17-20 April, 2018, Santa Cruz de Tenerife, Canary Islands, Spain.
- [4] Voice: technologies and algorithms for biometrics applications  
<https://ieeexplore.ieee.org/servlet/opac?mdnumber=E W1182>
- [5] Smart online assessment system for descriptive responses using machine learning techniques, 2017 International Conference on Communication and Signal Processing (ICCSP).
- [6] W. T. Yih and C. Meek, "Improving similarity measures for short segments of text," in *Proceedings of the National Conference on Artificial Intelligence*. vol. 22. no. 2. Menlo Park, CA; Cambridge, MA; London; AAAI Press; MIT Press; 1999, 2007.
- [7] Saat, N.M.; Singh, D. "Assessing suitability of candidates for selection using candidates' profiling report", *Electrical Engineering and Informatics (ICEEI)*, 2011 International Conference on, On page(s): 1 – 6
- [8] F. Batmaz and C.J. Hinde A Diagram Drawing Tool for Semi-Automatic Assessment of Conceptual Database Diagrams In *Proceedings of the 10th CAA International Computer Assisted Assessment Conference*, pp. 71-84, 2006.
- [9] Athanasios Tsintsifas. A Framework for the Computer Based Assessment of Diagram Based Coursework. The University of Nottingham for the degree of Doctor of Philosophy, March 2002.
- [10] Vinodh P Vijayan, Deepti John, Merina Thomas, Neetha V Maliackal, Sara Sangeetha Varghese "Multi Agent Path Planning Approach to Dynamic Free Flight Environment", *International Journal of Recent Trends in Engineering (IJRTE)*, ISSN 1797-9617 Volume 1, Number 1, May 2009, Page(s): 41-46.
- [11] Juby Joseph, Vinodh P Vijayan "Misdirection Attack in WSN Due to Selfish Nodes; Detection and Suppression using Longer Path Protocol" *International Journal of Advanced Research in Computer Science and Software Engineering*, Volume 4, Issue 7, July 2014, pp. 825-829, ISSN: 2277 128X
- [12] V P Vijayan, Biju Paul "Multi Objective Traffic Prediction Using Type-2 Fuzzy Logic and Ambient Intelligence" *International Conference on Advances in Computer Engineering 2010*, Published in IEEE Computer Society Proceedings, ISBN: 978-0-7695-4058-0, Print ISBN: 978-1-4244-7154-6
- [13] Vijayan V P, Gopinathan E "Improving Network Coverage and Life-Time in a Cooperative Wireless mobile Sensor Network " *Fourth International Conference on Advances in computing and communications (ICACC)* Aug, 2014. Published in IEEE Computer Society Proceedings. Print ISBN: 978-1-4799-4364-7, INSPEC AccessionNumber:14630874, DOI:10.1109/ICACC. 2014.1 6 PP 42-45.
- [14] Vinodh P Vijayan, Biju Paul " Traffic scheduling for Green city through energy efficient Wireless sensor Networks " *International Journal of Advanced Trends in Computer Science and Engineering*, Volume 8, No.4, July – August 2019, ISSN 2278-3091,  
<https://doi.org/10.30534/ijatcse/2019/81842019>.