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## ONLINE PROCTORING SYSTEM

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**Abstract:** An online exam proctoring system is a software solution designed to monitor and ensure the integrity of online exams. To identify any suspect activity or attempts at cheating during the exam, it usually has features like identity verification, real-time video monitoring, screen recording, and advanced analytics. An abstract for such a system would emphasize its principal features and its contribution to the upkeep of an impartial and safe online testing environment. Robust online proctoring systems have become essential to upholding academic integrity due to the swift transition to online learning and remote examinations. This abstract gives a summary of an online proctoring system that was created to deal with the difficulties associated with conducting tests remotely. A secure and trustworthy examination environment is created by the system by fusing secure identity verification with AI-driven monitoring. To find and identify dishonest behavior, it uses screen surveillance and facial recognition.

**Keywords – Proctoring, Real-Time Video Monitoring, Identity Verification.**

### I. INTRODUCTION

Education has crossed traditional lines in the digital age, presenting both benefits and difficulties. Ensuring the integrity of online tests has proven to be one of the major issues. The online proctoring system is here, a technological marvel created to meet the increasing need for reliable and secure distant exams. Since online proctoring systems address the persistent problem of online assessment cheating, they have completely changed the nature of education. These systems use state-of-the-art technologies, such as machine learning and artificial intelligence, to authenticate and monitor test-takers in real time. This paper examines the main features, advantages, and drawbacks of online proctoring systems. In digital learning contexts, online proctoring is a technique for remotely supervising examinations to guarantee academic integrity. The objective is to imitate the supervision of conventional test rooms in the virtual world by utilizing technology such as AI algorithms and video surveillance. The issues of cheating are addressed by this method, which also keeps distant learners in a safe testing environment. A virtual oversight technique for distant exam taking is called online proctoring. In online learning, it tackles the requirement for safe and regulated testing settings.

### II. LITERATURE REVIEW

[1]User interface design is an integral part of any software. Thus, online review is an equally important system in e-learning. Thus, online exam design features are an important factor in improving the effectiveness and convenience of the exam. An online exam typically uses nine main design features, four fonts (ie type, size, color, and style), background color, beep, group of questions, \time counters, and number of questions per page. The values of these characteristics are closely related to the characteristics of the user, whether they are physical, cognitive, psychomotor, demographic or experiential.

Our experiment was conducted with 119 students to find a generally recommended online revision plan. The results show that students' preference for the design of the online exam interface varied, with students preferring to group questions by topic and then by type. The most popular font was Arial, which was size 14 or 12 and uses a standard font. Also, white background and black text were the most popular. Most students unread 5 and

3 questions per page respectively. The timer was the most popular time calculator. When it comes to sound signals, 15 and 5 minutes were the most chosen by the students.[8].

[2] Validating and securing the identity of online students is one of the most important challenges in online learning today. Especially in the case of online certification and accreditation, educational organizations must ensure that online students who have completed the learning and received academic credits are enrolled in courses. In addition, they must ensure that these students complete all online training activities without cheating or appropriate behavior. The COVID-19 pandemic has accelerated (in some cases unexpectedly) the transition and implementation of online education strategies, and thus the need for secure mechanisms to authenticate and track online learners. Today there are several technologies with varying degrees of automation. In this article, they describe in detail a concrete solution based on the verification of diverse biometric techniques and an automatic testing system (system workflow and artificial intelligence algorithms), which includes functions that solve the main problems of the market: highly scalable, automatic, low cost, low hardware and software requirements, reliable and passive for the user, student. Finally, this article discusses a comprehensive system technology failure test, user usability and privacy perception study and their results.[2].

[3] Since COVID-19, there have been many innovations in teaching and learning. Schools are going digital to give their students more tools. Thanks to technology, students have more options to study and improve their skills at their own pace. With the shift toward online tests, the biggest obstacle in online mode is the lack of a physical invigilator. As a result, online proctoring is becoming more popular and AI powered proctoring solutions are becoming more demanding.

In this project, there is a strategy to avoid the physical presence of a proctor while taking the test. It captures video using a webcam along with active window capture. It analyzes the test taker's face to predict his emotions. To determine his head pose, it identifies his feature points. Additionally, it detects aspects such as a phone, a textbook, or the presence of another person. With this combination of models, it creates an intelligent rule-based inference system that is able to determine if there was any malpractice during the examination.[1]

[4] Improvements in online learning and online assessment frameworks are growing rapidly. The main goal is to develop a model that aims to isolate common examples of problematic activities such as conversations during a test or turn, processing accuracy and calculation accuracy. Certain assumptions are made about the normal behavior of delegation tests. In the current system, it requires more computing power and the speed is lower. Although it doesn't calculate much more accurately and the system can only handle one teacher for every twenty students. That is why it is important to develop a frame that is very precise and requires less manual strength. The detection relies on the highlights recorded using texture features, following the Haar Cascade classifier and ADA Boosting calculation and looking for clarified examples from pre-recorded clips to prepare a framework for training the system behavior, the framework is designed to select an emotional support network to work with the administration of scheduled tests and to isolate bad behavior or misconduct.[4].

[5] Worldwide, a wide range of universities and Information Technology (IT) schools provide online courses, tests, and credentials. To conduct the exams from any location, delivery tools have been developed. Saving time and money on travel expenses is the result of applying this. There is a high demand for online courses and tests these days because of the COVID-19 pandemic. This study proposes a novel 360-degree security camera exam proctoring method. The primary problem with online tests is security[7].

[6] Due to its accessibility, adaptability, and user-friendliness, e-learning has gained popularity in several nations during the past few years. The primary obstacle confronting the research community with regard to online exams is the methods of proctoring. In this work, they offer a system that eliminates the need for a proctor to be physically present for the entire exam by developing an extensive multi-modal system[9].

### III. PROBLEM STATEMENT

The growing adoption of online learning has highlighted the need for a reliable online proctoring system that ensures the integrity of distance assessment. Current systems often fail to effectively prevent fraudulent behavior. This project aims to develop a new deep learning based online authentication system to solve challenges such as face recognition for authentication[6], gaze tracking [3], mouth recognition, mobile phone recognition and multi-person recognition[5]. In addition, the system includes question paper management and e-book integration functions, creating a complete solution for safe and reliable online studies. The aim is to address the limitations of existing testing systems and increase the reliability of remote assessment.

#### IV. PROPOSED SYSTEM

Online testing is widely used to keep exams fair in the age of digital learning. But it is not without problems. Some are concerned about privacy and fairness when using these tools. The good thing is that technology is constantly evolving, providing more and more accurate ways to track exams while being fair to everyone. Therefore, there is constant discussion and research to find the best balance between securing exams and respecting students' rights. Our system uses advanced technologies to monitor student behavior during exams. In particular, it evaluates eye gestures and facial movements to identify possible abuses and thus ensure the integrity of the assessment process. In addition, the system uses object techniques to identify and prevent the use of unauthorized material or external aids that may compromise the fairness of the exam. By combining these features, our project aims to promote a safe and reliable environment for academic assessments, while maintaining the standards of integrity and accountability expected in an educational environment..

The purpose of an online proctoring system is to oversee and guarantee the accuracy of online exams. The proposed system consist of

- Proctoring Module
- Admin Module
- Teacher Module
- Student module

The proctoring module consist of attributes such as:

1. Identity Verification: To confirm the test-taker's identity, facial recognition technology or other biometric techniques are used.
2. Environment Scanning: Uses a webcam to keep an eye on the test-taker's surroundings and identify any things or people that are not approved.
3. Screen Recording: This feature captures the test-taker's screen activity in order to spot any questionable conduct.
4. Real-time Monitoring: This technique uses automated systems or live proctors to continuously watch test-takers during the exam.
5. Behavioral Analysis: This method looks for anomalies or indications of dishonesty in test-taker behavior by analyzing it using algorithms.
6. Report Generation: Produces thorough reports emphasizing any unusual or suspicious activity that occurred throughout the exam.

**Admin Module:** To obtain user IDs and passwords, administrators must send a formal email request to the developer. Administrators will be able to obtain the login credentials for the system by contacting the developer. Administrators can access the system by using these login credentials. Administrators have access to and control over exam reports, as well as the power to add and manage teachers inside the system.

**Teacher Module:** Teachers can access the Teacher Module by logging in with the Gmail credentials that the admin has issued them once they have been added. Teachers who have logged in can see the list of enrolled pupils on a dashboard. Educators can also design and manage tests and get a list of all the students who have signed up for them. Furthermore, teachers have the ability to publish notifications as needed and can access and analyse exam reports. Instructors can include notes, e-books, and question papers.

**Student Module:** Students are required to complete the registration process before gaining access to the system. Upon registration, students can utilize their registered Gmail credentials to log in. Once logged in, students can proceed to register for exams and subsequently participate in them. Additionally, students have the ability to view any notifications posted within the system. Students can access question papers, notes and e-books that are provided.

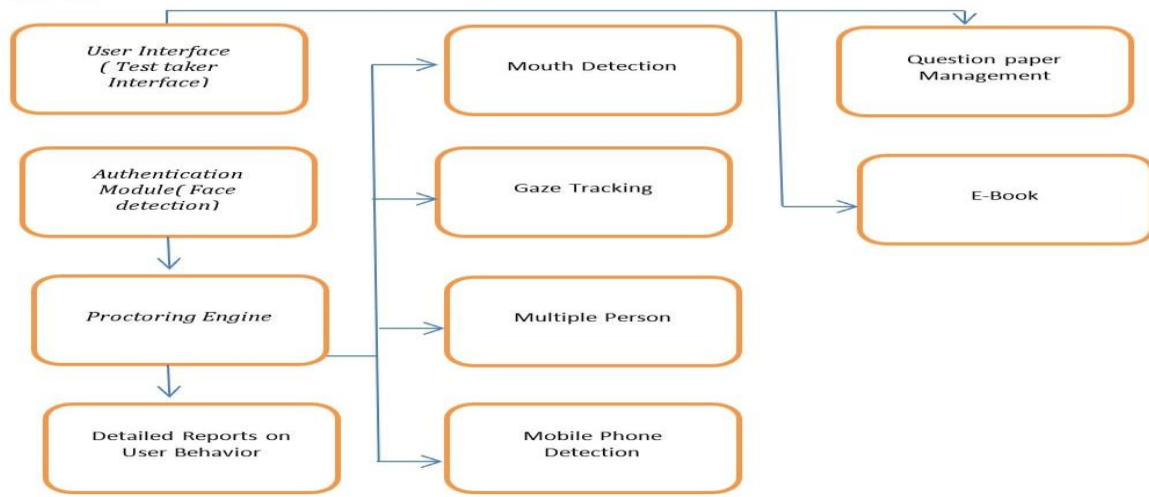


Fig 1: System Architecture

## V. RESULTS AND DISCUSSION

The development of our online proctoring project, focusing on monitoring movements and gestures for malpractices, marks a significant step forward in academic integrity at the college level. By implementing a simple yet effective system that does not rely on advanced technology, we have addressed the need for enhanced supervision during examinations.

Compared to traditional methods of monitoring, which often involve manual observation and supervision, our project offers a practical and accessible solution. With a focus on leveraging basic gestures for identification and monitoring, we have minimized the complexity and resource requirements associated with proctoring systems.

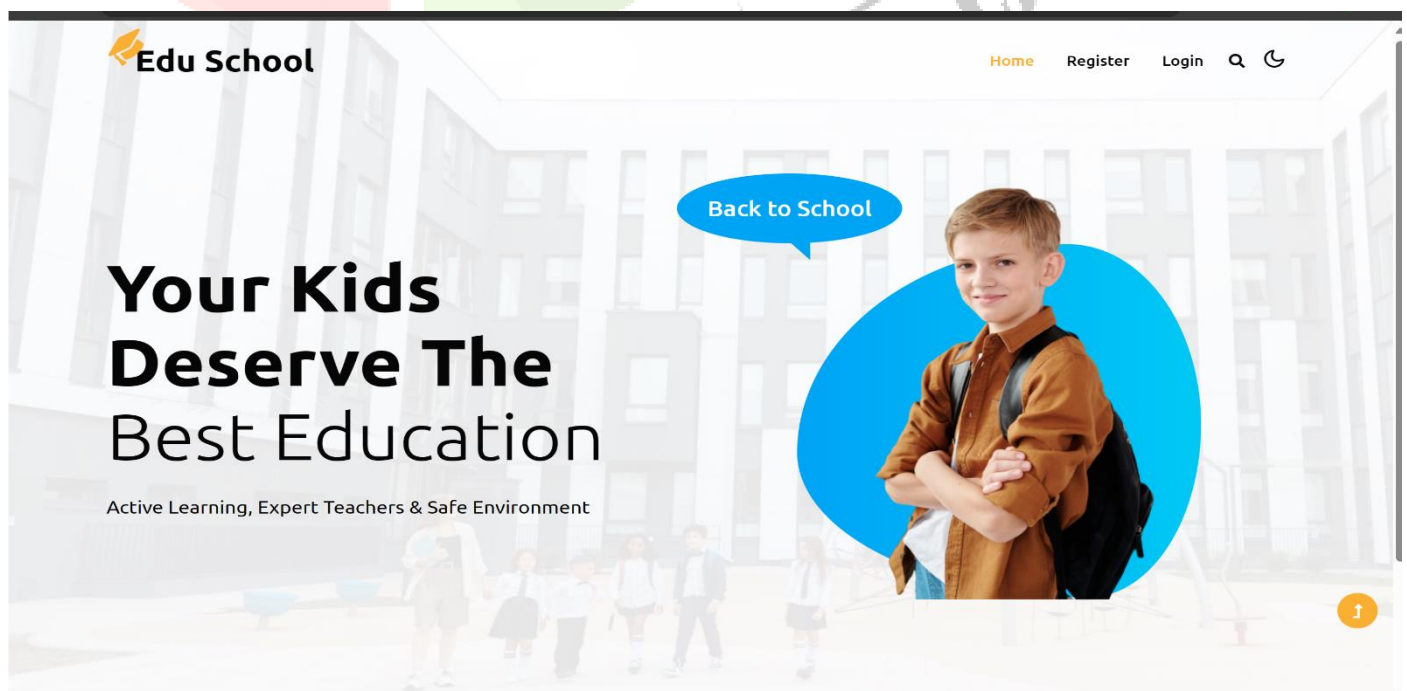


Fig 2: User Interface for Online proctoring system

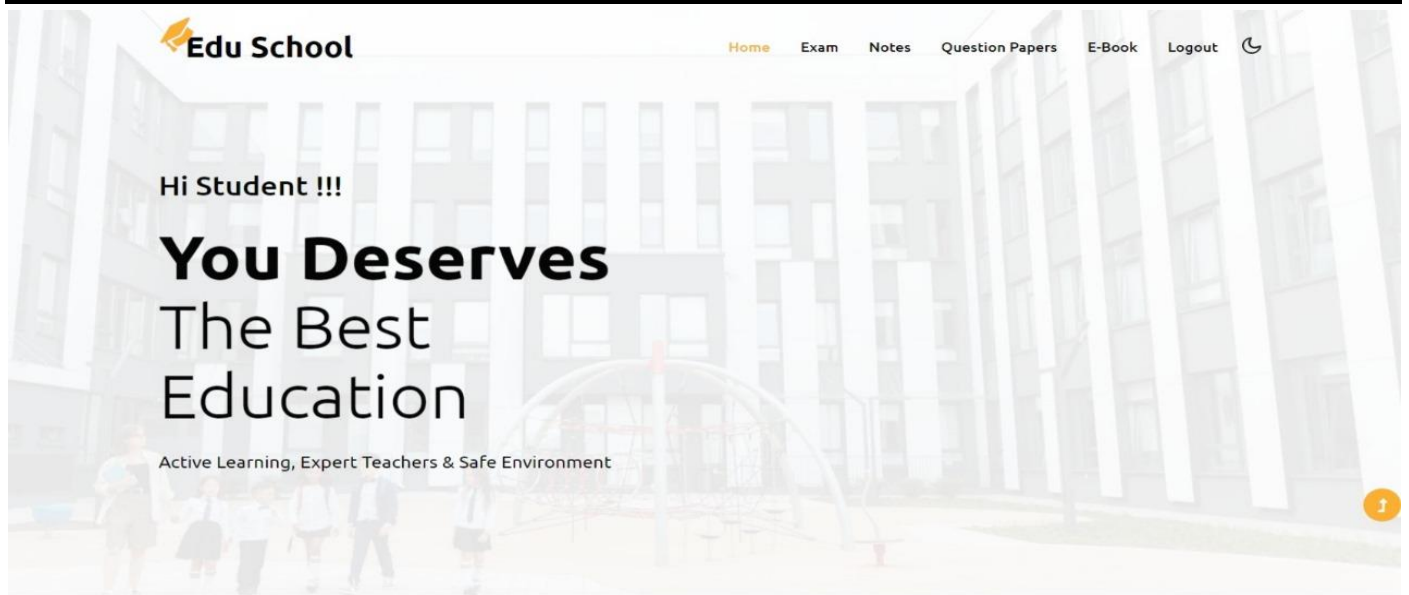


Fig 2.1 : Student login page

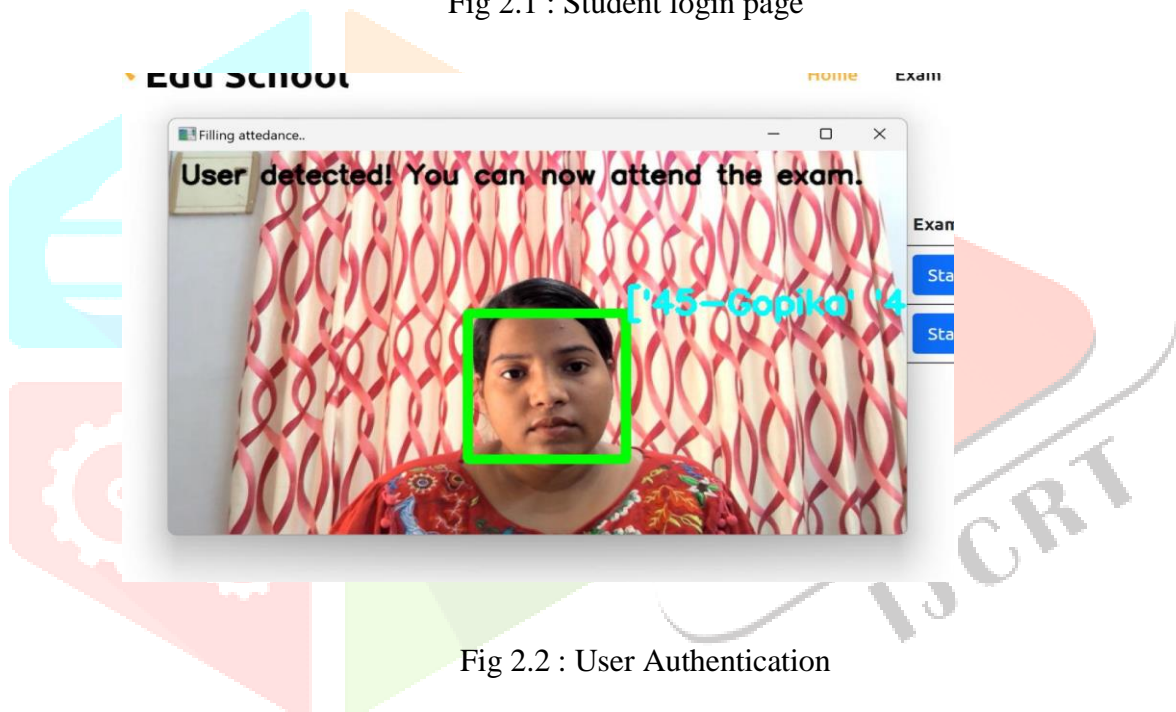


Fig 2.2 : User Authentication

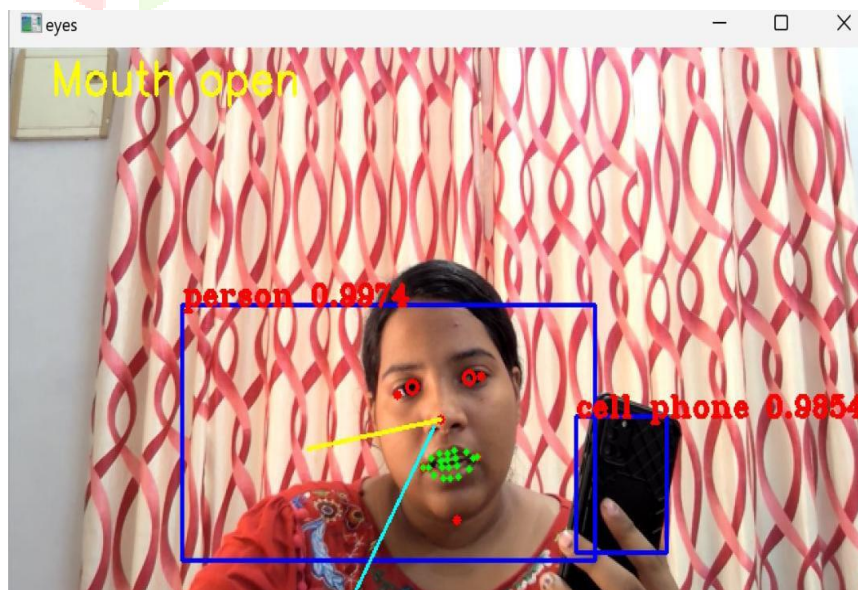


Fig 2.3: Cheating Detection

Student Name	Class	Division	Date	head_down	head_up	head_right	head_left	looking_left	looking_right	looking_up	Mouth open	phone_detected	multiple_person
gopika	BCA	sem1	2024-05-03	1	3	4	0	0	0	0	99	55	0

Fig 2.4: Report

## VI. CONCLUSION

In conclusion, the integration of an online proctoring system with e-book and question paper management offers a comprehensive solution for remote learning and examination. This innovative approach ensures academic integrity, accessibility, and efficiency. With streamlined processes for content delivery, assessment, and monitoring, it enhances the educational experience for both students and educators. The system provides a secure and reliable platform for conducting exams remotely while leveraging digital resources effectively. Overall, it represents a significant advancement in educational technology, facilitating the transition to online learning and assessment in today's digital age.

## REFERENCES

- [1]. N. Malhotra, R. Suri, P. Verma and R. Kumar, "Smart Artificial Intelligence Based Online Proctoring System," 2022 IEEE Delhi Section Conference (DELCON), New Delhi, India, 2022, pp. 1-5, doi: 10.1109/DELCON54057.2022.9753313.
- [2]. Online Student Authentication and Proctoring System Based on Multimodal Biometrics Technology. May 2021 IEEE Access PP(99):1-1 DOI:10.1109/ACCESS.2021.3079375.
- [3]. S. Maniar, K. Sukhani, K. Shah and S. Dhage, "Automated Proctoring System using Computer Vision Techniques," 2021 International Conference on System, Computation, Automation and Networking (ICSCAN), Puducherry, India, 2021, pp. 1-6, doi: 10.1109/ICSCAN53069.2021.9526411.
- [4]. S. V, R. A, B. Gope and S. S, "Detection of Anomalous Behaviour in Online Exam towards Automated Proctoring," 2021 International Conference on System, Computation, Automation and Networking (ICSCAN), Puducherry, India, 2021, pp. 1-5, doi: 10.1109/ICSCAN53069.2021.9526448.
- [5]. A. J S, H. S. Kumaran, S. U, K. P. B. V. Rajesh and L. R, "Deep Learning based Approach for Facilitating Online Proctoring using Transfer Learning," 2021 5th International Conference on Computer, Communication and Signal Processing (ICCCSP), Chennai, India, 2021, pp. 306-312, doi: 10.1109/ICCCSP52374.2021.9465530.

- [6]. M. Geetha, R. S. Latha, S. K. Nivetha, S. Hariprasath, S. Gowtham and C. S. Deepak, "Design of face detection and recognition system to monitor students during online examinations using Machine Learning algorithms," 2021 International Conference on Computer Communication and Informatics (ICCCI), Coimbatore, India, 2021, pp. 1-4, doi: 10.1109/ICCCI50826.2021.9402553.[
- [7]. A. A. Turani, J. H. Alkhateeb and A. A. Alsewari, "Students Online Exam Proctoring: A Case Study Using 360 Degree Security Cameras," 2020 Emerging Technology in Computing, Communication and Electronics (ETCCE), Bangladesh, 2020, pp. 1-5, doi: 10.1109/ETCCE51779.2020.9350872.
- [8]. Nader Abdel Karim, Zarina Shukur, Proposed features of an online examination interface design and its optimal values, Computers in Human Behavior, Volume 64, 2016.
- [9].S. Prathish, A. N. S. and K. Bijlani, "An intelligent system for online exam monitoring," 2016 International Conference on Information Science (ICIS), Kochi, India, 2016, pp. 138-143, doi: 10.1109/INFOSCI.2016.7845315.

