GlobalLogic®

Remote Invigilation System

Education

by
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Abstract:

Remote invigilation will be key to the future of education and training as the world deals with the COVID-19 pandemic and its aftermath.

Every industry has a new work address: one's own home. Whether it's IT, banking/finance, telecom or the health care system, people from every sector are now being encouraged to stay safe and work from home.

The education industry is no exception. From K–12 to higher education, students and teaching faculty are working online. For the time being, eLearning has taken over from traditional classroom instruction.

With online academics, there is a growing need for online examinations and invigilation. When students take exams from a remote environment (Starbucks, home office, etc.), they need to be monitored.

Thus, there is a need for a standard invigilation system for students and proctors/invigilators. Allowing an invigilator to see a student's face and expressions along with their computer screen view would be an advancement to remote invigilation.

Variations of this use case can be extrapolated and customized for use across different industries:

1. Education

- **a.** A professor can monitor their students taking online exams (university/college level)
- **b**. An invigilator can monitor examinees taking certification exams (corporate/test centers)

2. Retail:

- **a.** Central offices can monitor branch office activities
- **b.** Managers can monitor point-of-sale for training purposes (e.g., Taco Bell/McDonald's)

3. Online Meeting and Conference Solutions

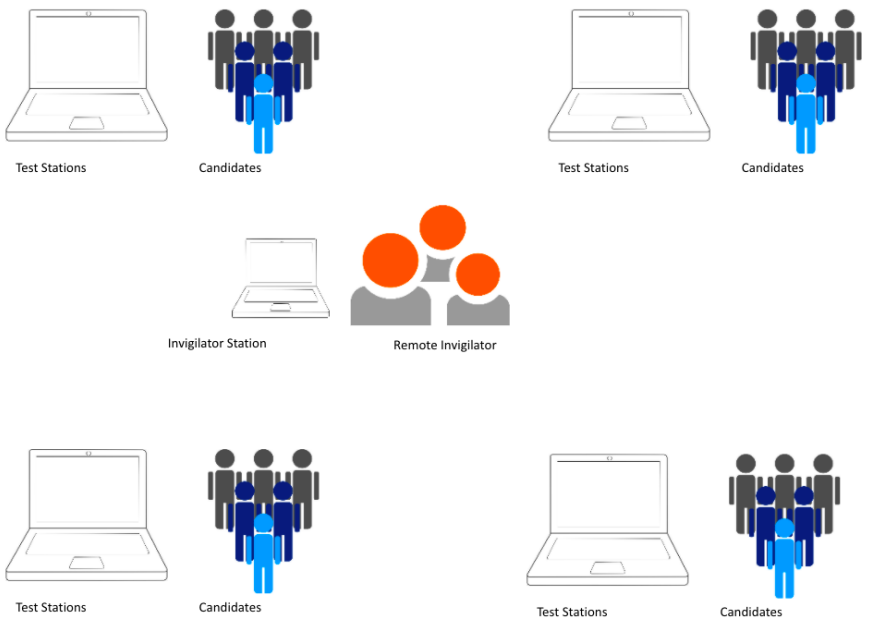
A potential tool for remote problem solving across different departments within an enterprise (business and technology departments, finance and IT).

In every use case mentioned above, the ability to watch both the person's face as well as their computer monitor will differentiate it from already existing solutions across the industry.

Introduction

The ability to monitor any exam or meeting from a centralized remote location in real-time is the purpose of a remote invigilation system. Institutions across the globe have started leveraging remote proctoring solutions to conduct online exams and ensure that students do not cheat.

A pictorial representation of a remote invigilation system is shown below:



In the past, all candidates/students had to gather at a common location at a specified time to take their exams, and an invigilator would be assigned to monitor. As depicted in the picture above, students/candidates/assessees can be remote and take any exam. Similarly, the invigilator/proctor can also be remote. Both the candidate and the proctor join through a session and go about their tasks–the student taking their exam while the invigilator monitors for fair practice.

An interface where an invigilator is able to watch the candidate and their computer monitor can be called a grid of 1x2. The candidate's grid has two sections: one of their face/appearance with background, and the second being the computer screen itself.

Benefits of Remote Invigilation

There are many benefits of remote invigilation:

1. Students can be anywhere physically but online in the same session – Comfort
2. Institutions do not need to spend money on test centers – Economical
3. Security and integrity of the mode of exams

Types of Invigilation

In a classroom mode, invigilation happens in the same time zone and at the same place. With the need for online exams and assessments, invigilation needs to change too:

a. Online Invigilation – Same time, same location (traditional method) as well as remotely but in the same time zone

b. Remote Invigilation – Same session, multiple locations

c. Record and Review – Same session, but a later point in time

Online invigilation can encompass the typical classroom exams/assessments and be extended to assessments invigilated online within the same time zone.

Remote invigilation involves a qualified invigilator available to preside over online assessments. Candidates can be anywhere in the world, and the remote invigilator can also be anywhere and in a different time zone, but everyone is connected through the same session.

Similarly, record and review can happen before results are published to a candidate.

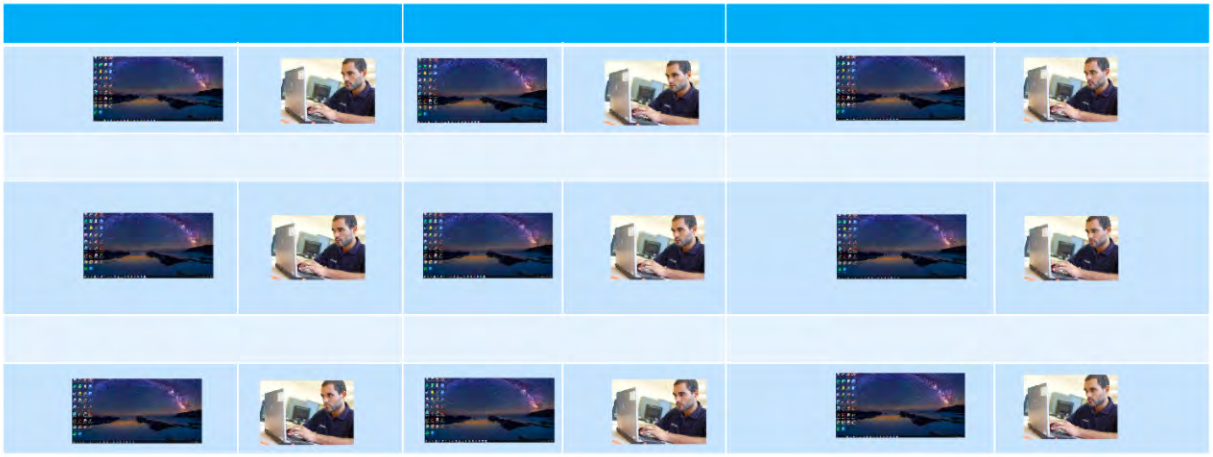
Tools for Remote Invigilation

In addition to the standard usage of laptops with webcams and microphones, there is a need for the following tools. This is the space that we need to develop and differentiate from the tools currently available within the industry.

1. A secure browser built on a Chromium-based engine that does not allow the candidate to open other browser windows to look for answers, screenprint, or post questions in forums, etc.
2. Many-to-1 chat capability (candidates to invigilator)
3. Ability of the invigilator view to show as many candidates as possible and present each candidate in a grid with a face and their current desktop view.
4. Ability to remotely check in a candidate using photo identification.
5. Ability to remotely terminate an exam/session and disqualify a candidate.
6. Ability to record and review a candidate's sessions.
7. Ability to store videos and comments in the cloud in a compressed format.
8. Build AI/ML/DL-based engines to remotely invigilate candidates – invigilator ratio at > 50:1.

Representative View

Below is a representative remote invigilator's view of a session:



This remote invigilator's view has a screen that contains nine grids, and each grid has the candidate's computer screen view on the left-hand side and the candidate's face on the right-hand side. This would permit the remote invigilator to see what the candidate is looking at and observe their behavior during the exam.

Enhancing this view further would make these grid views into thumbnails. This is where AI/ML would help look for aberrations in a candidate's behavior.

This solution would significantly enhance remote invigilation.

High-Level Product Feature List

Below is an attempt at a list of high-level features necessary to bring this solution to market.

The feature list is broken down based on modules:

- Administration Module
- Invigilator Portal
- Candidate Portal
- Customer Portal

Conclusion

A remote invigilation solution will enable us to partner directly with many educational institutions (colleges and universities globally), assessment solution providers across the globe, retail outlets, or any industry where training is involved. Remote invigilation can also help us assess future employees remotely. Thus, we can generate revenue and a digital product for a new world during and after the COVID-19 pandemic.

About the Author:

Rajesh Revanur is a Director, Engineering with GlobalLogic. He has experience in ideating, managing and delivering solutions (projects / products). He is a specialist in Managing and Delivering BPM (Business Process Management) technology based projects. He can be reached at Rajesh.Revanur@globallogic.com.

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