Are AI-Powered Exam Proctoring Systems the Answer We Have Been Waiting For?

Ped Day Session

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What It Is

"invigilation of exam-takers remotely, using audio and video and other anti-cheating methods to ensure integrity, credibility and authenticity to online exams."

Focus of AI-enabled Proctoring

- Detect Identity Fraud
- Analyze cheating behavior
- Discover Content Theft

How It Works

- **Online testing**: Need computer, webcam and good internet connection (512 kbps)

- **Advantages**: somewhat "controlled environment", attempt to reduce cheating and plagiarism

- **Role of AI**: reduce and even eliminate instances of cheating during online exams, flag suspicious cases (e.g. non-visibility of face, phone, talking to someone else, suspicious eye movement)

- "Mettl's futuristic AI algorithm is trained with more than 2.8 million proctored assessments. It can detect up to 18 dynamic digressions with over 95% accuracy." Mercer
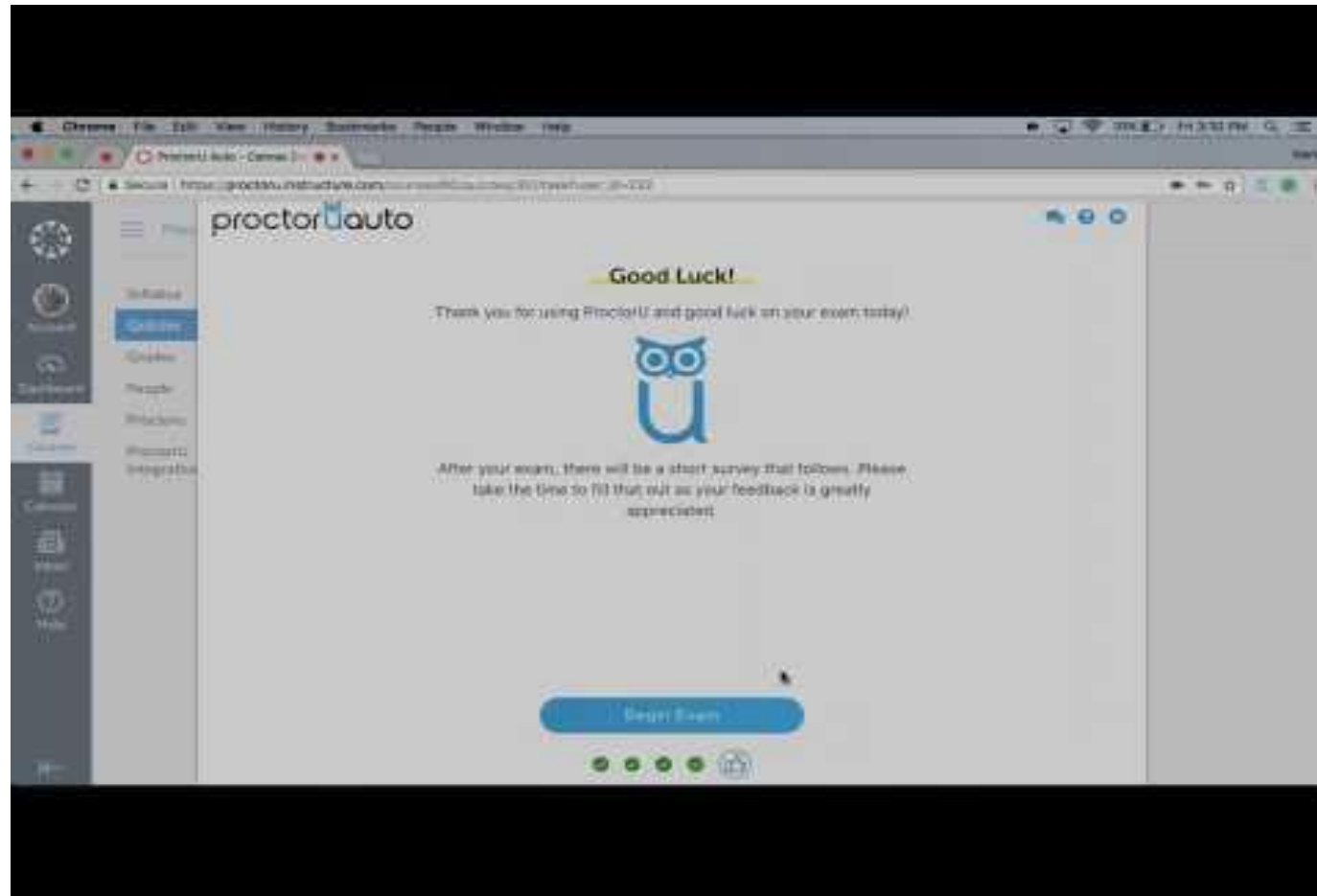
Before the Assessment

- **Sanitize the test taker's system**

- The exam is conducted on a secure browser, which prevents the test-taker from accessing any additional window and sharing screen with others.

- The candidate's IP address is captured to ensure that no other IP address is used to attempt the same assessment.

- Copy-paste is disabled

- **Authenticate the candidate**

- Enter registration details

- Take a picture

- Show a picture of ID proof

- **Scan the background**

What It Is Like to Take an Exam Proctored by ProctorU

AI Technologies Used During the Assessment

- **Voice Recognition**
  Pick up sounds and match it with the background noise to remove instances of cheating by recognizing speech patterns.

- **Facial Recognition**
  From identity verification to detecting new faces within a testing environment, facial recognition can be used in multiple ways.

- **Eye Movement Detection**
  AI-integrated Eye Movement Detection can help recognize eye movement patterns to identify if the candidate is looking straight towards the screen or is looking into any object, book or mobile phone.

- **Plane Detection**
  When it is combined with object recognition, the system will gain a better understanding of everything in a given space.

- **Mouth Detection**
  The distance between the lip key points can be noted. The infringement is reported if the distance between the lip points of users increases than a specific value.

After the Assessment

A detailed proctoring report with:

• Candidate's audio and video recording is generated.

• All suspicious activities

• "Credibility Index" / "Suspicion Level"

Different Types of Online Proctoring

- Live Proctoring

  Human invigilator monitors the exam via webcam

- Recorded Proctoring

  Audio visual and screen sharing is recorded and later reviewed

- Auto proctoring

  AI-based proctoring monitors the exam live

Comparison

Conventional method	Online AI Proctoring
Book a physical venue in advance	No booking required
Logistical execution	No logistic hassle
Dedicating invigilators for every exam room	Software to invigilate
Geographical restriction	Wider reach
Use lots of paper	Environmentally friendly
Pencils and erasers	Computer, high-speed internet and webcam

Advantages

• Effectiveness in (Not a consensus, but…):

•Promoting Learning (Okada & Scott, 2015; Wellman, 2005)

•Catching Cheating (Harmon & Lambrinos, 2008; Daffin & Jones, 2018)

•*"I definitely prefer an online viva instead of a F2F oral assessment. The reasons are the interaction with examiner is fast and objective. It is possible to attend the event anywhere through the Internet and webcam without any technical experience. I can focus on the answer to the question without looking at the examiner's face and feeling worried."* (Student 6) (Okada & Scott, 2015)

Disadvantages

- Technical Problems:
  - Get flagged for looking at the clock
  - Problems with computer (e.g., windows size, 7-hour exam because could not log in, change settings)
  - Can't talk to someone else (issues with siblings)

- Anxiety can lead to lower scores

- Determine intent behind an action is a problem

- Facial recognition does not work for some groups (e.g. racialized minorities)

- Privacy issues

- Efficiency

- More research is needed

- Lockdown browser, randomized test questions, inability to backtrack,and time limit yield good results. To know that you are somewhat "monitored"...