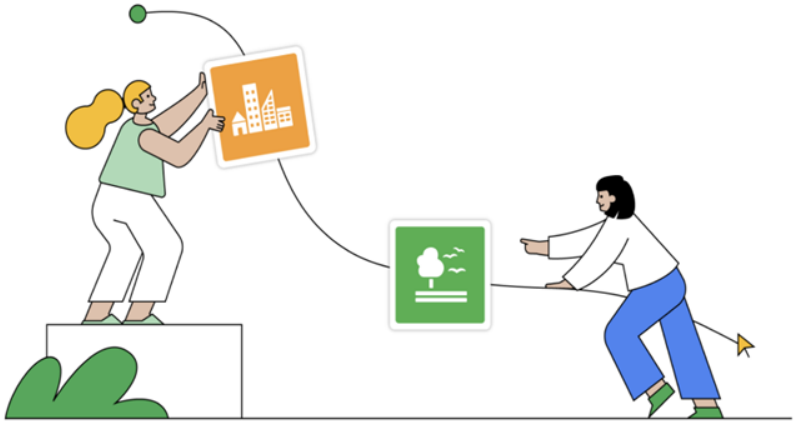
Powered by H2S

Solution Challenge



Team Details

a. **Team name:** Googol
b. **Team Members:** Arun Pranav A T (Leader), Navdeep R
c. **Problem Statement:** Uneven access to Quality Education is a global issue. This project aims to ensure that all students have equal opportunities to succeed in their exams by providing a ***reliable and effective cheating detection system***.

Solution Challenge

Brief about your solution

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Google Project IDX

Problem Statement

With the rapid rise of online education and remote assessments, maintaining academic integrity has become a growing challenge.

Traditional monitoring methods are ineffective or non-scalable, leading to increased instances of cheating during virtual exams.

There is a critical need for a robust, real-time solution that can detect and deter dishonest behavior, ensuring a fair testing environment for all students.

Googol Test Cheating Detector (GTCD) is an AI-powered desktop app that ensures fair online exams through real-time monitoring and intelligent cheating detection.

Built with Python, OpenCV, and CustomTkinter, GTCD tracks face orientation, window/app switching, and suspicious keystrokes to flag dishonest behavior.

Integrated with Google tools like **Gemini API** and **Google IDX**, the solution provides a scalable, developer-friendly platform to support educational institutions in ensuring fair assessments globally.

Solution Challenge

Opportunities

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1. How different is it from any of the other existing ideas?

- Unlike single-focus solutions (E.G., Basic gaze tracking or browser lockdowns), our platform integrates **multi-modal detection** (keystroke dynamics, audio analysis, LLM-prompt fingerprinting, and adaptive behavioral biometrics) to address all cheating vectors.

2. How will it be able to solve the problem?

- Our solution addresses cheating effectively by **integrating keystroke patterns, eye movement tracking, audio monitoring, and tab tracking into a single intelligent system**.
- This system learns each student's normal behavior during practice tests, allowing it to accurately detect anomalies in **real-time**. By combining these features, we ensure reliability and accuracy in identifying cheating attempts, making it an indispensable tool for maintaining exam integrity.

3. USP of the proposed solution

- Unified, self-learning system that evolves with emerging threats (E.G., Interview coder) via continuous model updates, offering 360° exam integrity with sub-second response times—replacing days of manual reviews.
- Uses **Gemini AI API** to give the final assessment on how the student cheated during exams by analyzing the logs saved in form of a pdf.

List of features offered by the solution

Real-time Monitoring

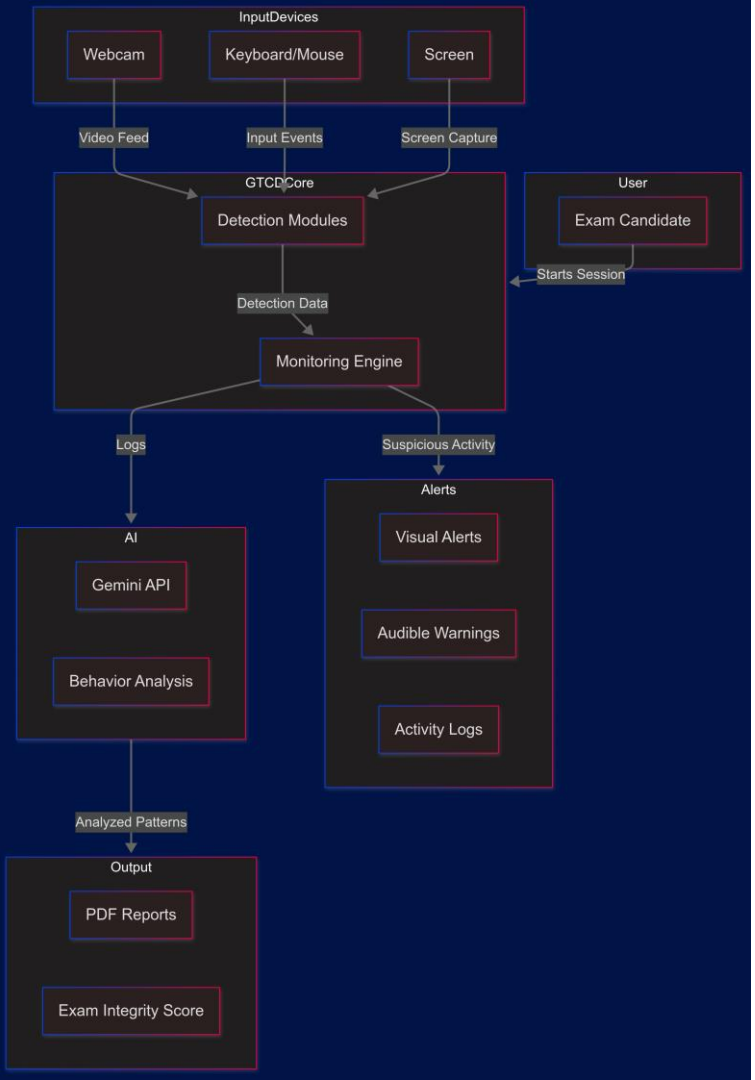
- 🖥️ **Window Activity Tracking - Detects browser/application switching**
- ⌨️ **Keyboard Shortcut Monitoring - Flags potential LLM access attempts**
- 👁️ **Visual Attention Analysis - Tracks face position and focus**
- 📷 **Camera Feed Integration - Live monitoring with focus zone visualization**

Advanced Detection

- 🔍 **Face Detection** - Using OpenCV Haar cascades
- 📊 **Behavior Analysis** - Measures attention deviation from focus zone
- 🚨 **Multi-level Alerts** - Visual, auditory, and log-based warnings
- 🔔 **Audible Alerts** - Immediate notification for suspicious activity

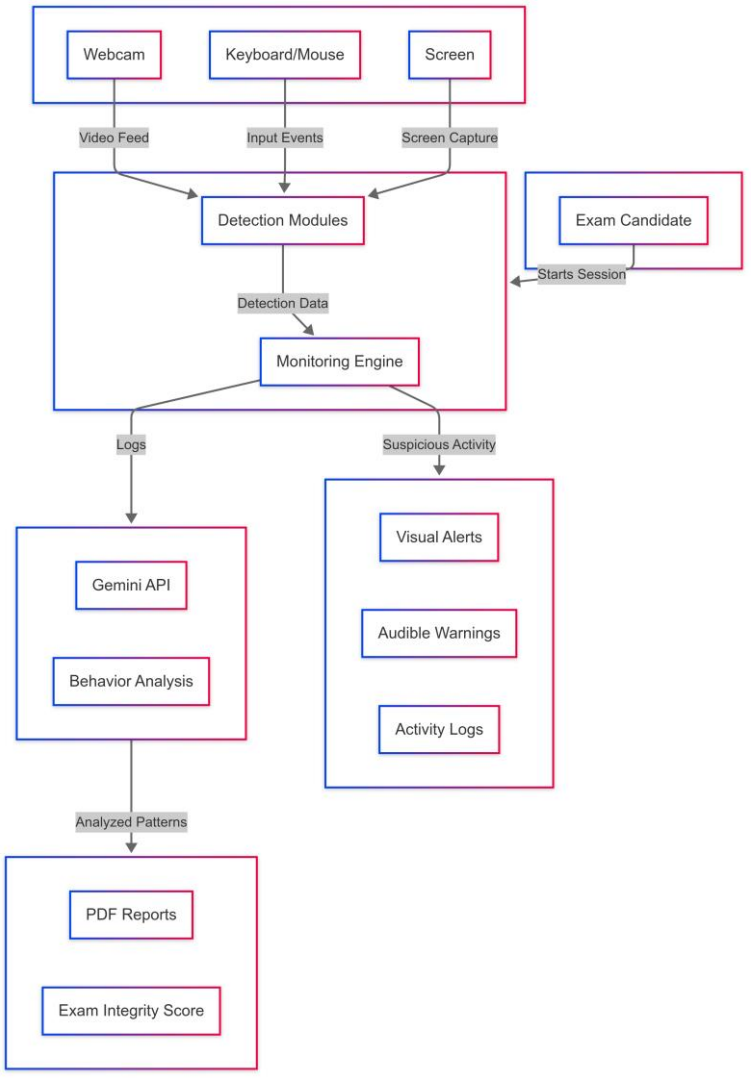
Reporting & Analytics

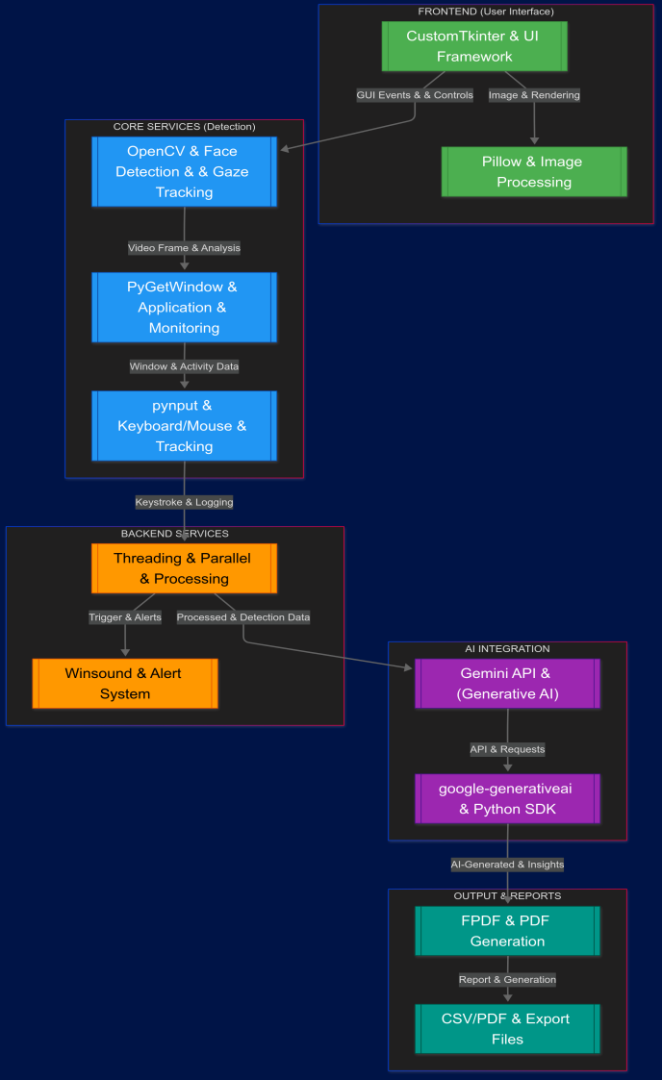
- 📝 **Automated Summary Generation** - Powered by Gemini AI
- 📄 **PDF Report Export** - Comprehensive exam integrity reports
- ⏱️ **Timestamped Logging** - Detailed activity history



Process Flow Diagram

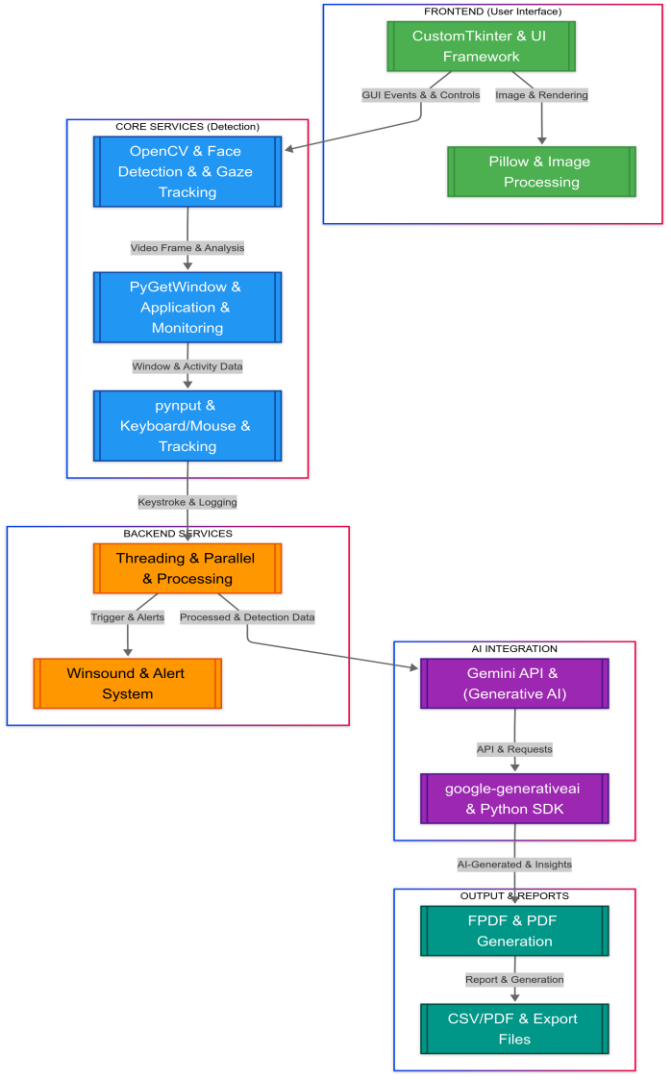
(Added both dark and light theme for better readability)





Architecture Diagram

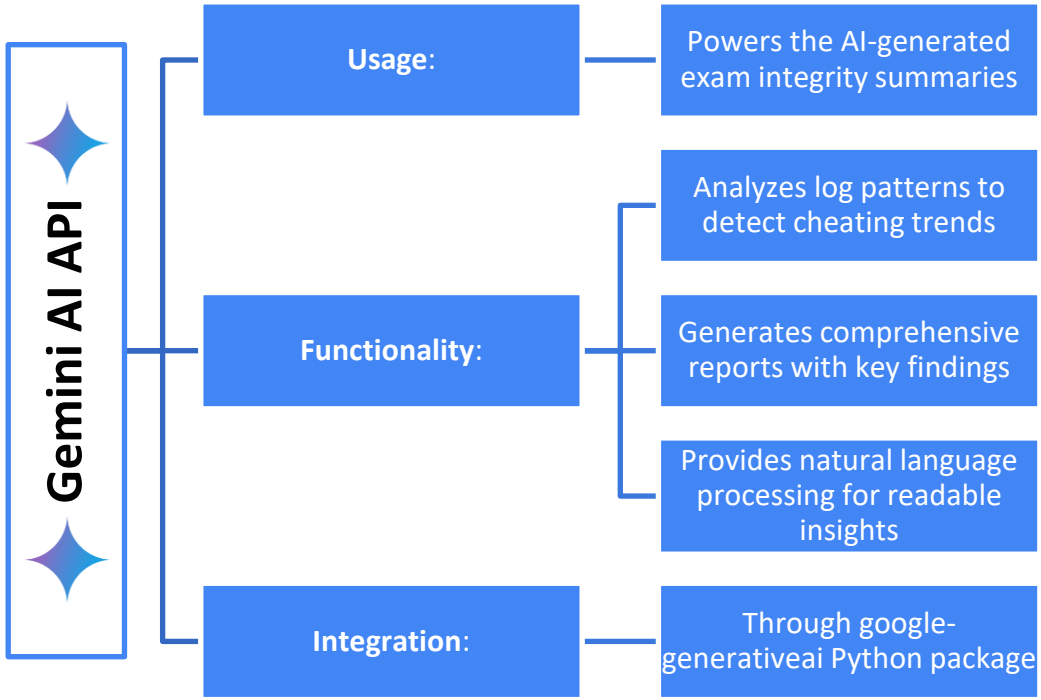
(Added both dark and light theme for better readability)



Google technologies used in the solution

Google Project IDX

Usage	Benefits
Primary development environment	Cloud-based IDE for seamless coding from any device
	Integrated Gemini code assistance for development
	Pre-configured Python environment



Estimated implementation cost

The cost depends on the Google Cloud hosting costs.
If in case we need to make it accessible through live internet to a large number of users it might cost.
As of now it is made as a desktop application which can be downloaded for free.

Exam Integrity Summary Report

Exam Integrity Summary

PDF Saved Successfully

Location: reports/exam_report_20250405_131

Close

* 13:12:13-13:12:27: A large number of attention deviation alerts triggered, indicating a sudden shift in behavior.
* 13:12:14: First AI access attempt detected.
* 13:12:15: Window changed to "Snipping Tool Overlay."
* 13:12:18: Window changed to "Googol Test Cheating Detector."
* 13:12:30: Second AI access attempt detected.
* 13:12:31: Window changed to "Snipping Tool Overlay."
* 13:12:38: Window changed to "Googol Test Cheating Detector."
* 13:12:42: Third AI access attempt detected; window changes to "main.py - GTCD - Visual Studio Code".
* 13:12:43: Fourth AI access attempt detected; window changes to "Task Switching" and a "CRITICAL ALERT: SWITCHED TO AI MODEL-CHAT GPT!!" is triggered.
* 13:12:45-13:12:46: Multiple "CRITICAL ALERT: SWITCHED TO AI MODEL-CHAT GPT!!" alerts triggered.
* 13:12:47: Fifth AI access attempt detected; window changes to "Task Switching".
* 13:12:48: Window changed to "Googol Test Cheating Detector".
* 13:12:51: Window changed to "Full Security Audit Logs."
* 13:12:57: Sixth AI access attempt detected.
* 13:12:58: Window changed to "Snipping Tool Overlay".
* 13:13:05: Window changed to "Full Security Audit Logs".
* 13:13:07: Window changed to "Googol Test Cheating Detector".

Final Assessment

The exam integrity is severely compromised. The logs provide strong evidence of deliberate and persistent cheating attempts, including the use of AI (specifically ChatGPT), a snipping tool, and a "Googol Test Cheating Detector." The examinee also attempted to access security logs, indicating an awareness of and attempt to bypass the proctoring system. The exam results should be considered invalid, and further investigation is warranted.

Export as PDF

Full Security Audit Logs

FULL SECURITY LOGS

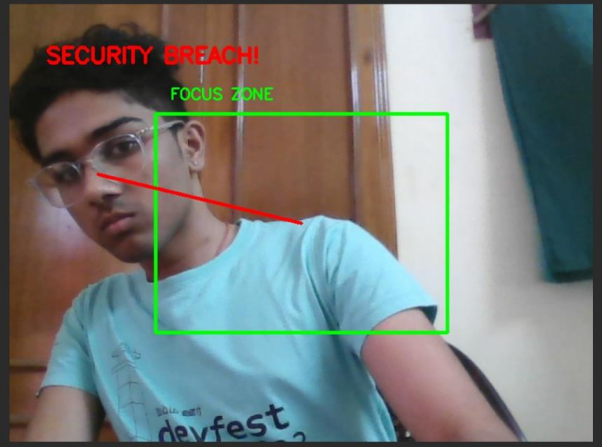
Close

13:12:37	CHEAT DETECTED	Significant attention deviation detected!
13:12:38	CHEAT DETECTED	Significant attention deviation detected!
13:12:38	WARNING	Window changed to: Googol Test Cheating Detector
13:12:40	CHEAT DETECTED	Significant attention deviation detected!
13:12:41	CHEAT DETECTED	Significant attention deviation detected!
13:12:42	AI ALERT	LLM access attempt detected!
13:12:42	CHEAT DETECTED	Significant attention deviation detected!
13:12:42	WARNING	Window changed to: main.py - GTCD - Visual Studio Code
13:12:43	AI ALERT	LLM access attempt detected!
13:12:43	WARNING	Window changed to: Task Switching
13:12:43	CRITICAL ALERT	SWITCHED TO AI MODEL-CHAT GPT!!
13:12:44	AI ALERT	LLM access attempt detected!
13:12:44	WARNING	Window changed to: Task Switching
13:12:45	CRITICAL ALERT	SWITCHED TO AI MODEL-CHAT GPT!!
13:12:46	CRITICAL ALERT	SWITCHED TO AI MODEL-CHAT GPT!!
13:12:46	CRITICAL ALERT	SWITCHED TO AI MODEL-CHAT GPT!!
13:12:47	AI ALERT	LLM access attempt detected!
13:12:47	WARNING	Window changed to: Task Switching
13:12:48	WARNING	Window changed to: Googol Test Cheating Detector

Snap-shots of the MVP

Googol Test Cheating Detector

Generate Summary



Exam Integrity Report

Date: 2025-04-05 13:13:36

Total Alerts: 101

Exam Integrity Report

- Date: 2025-04-05

- Total Alerts: 80

Key Findings

* Significant attention deviation detected repeatedly throughout the logged period, suggesting the examinee was not focused on the exam.

* Multiple attempts to access Large Language Models (LLMs) were detected, indicating an attempt to use AI for assistance.

* The examinee switched to or used "Snipping Tool Overlay" multiple times, possibly to capture exam content.

* The examinee repeatedly switched windows to a program called "Googol Test Cheating Detector" indicating possible use of a third party application to compromise the integrity of the examination.

Solution Challenge

Thank you

Have a look at our project through these links :

1. **GitHub** Public Repository - https://github.com/navdeep-r/GTCD
2. **Demo Video** Link (3 Minutes) - https://youtu.be/1e-_Og-a1J8
3. **MVP** Link - https://github.com/navdeep-r/GTCD/releases/download/cheating-detection/GTCD.exe