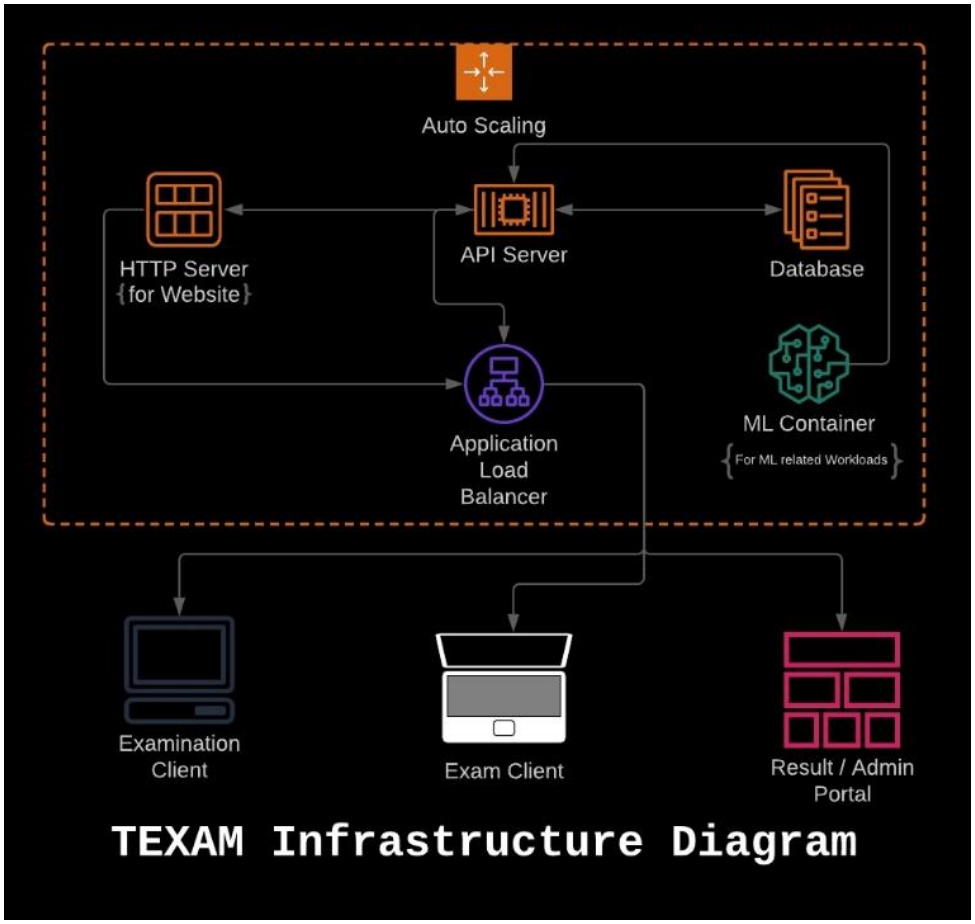
TEXAM – 'AI powered Testing Platform'

- The Issue
  - "With The advent of Pandemic , The inefficiency of online testing platforms surfaced along with bulk load of miscellaneous activity during online exam"
- The Idea
  - "Building a Robust AI driven System, to conduct procured test, & minimizing the scope Cheating to The Maximum Extent."
    - Advanced Contact-Less System : Selection of options through hand gestures. Hence, No contact between the internet connected device and Candidate.
    - AI Monitored Video & audio stream : With AI Monitoring The Candidate, it overcomes the inefficiency of teachers to monitor multiple candidates online.
      - Penalties when candidate come closer to system or speaks something.
      - 3 penalties lead to one mark deduction.
- Features of Back-End Server
  - Use of REST API: This enables the making of client applications more secure and easy. And also Less Troublesome. More forms of client applications can be built easily and work seamlessly with all clients and the servers.
  - The API Blocks Complete access to the Database from the client. Provides basic indirect access for storing responses and access to the questions by the client.
  - Containerization of infrastructure: the back-end is containerized so that we can achieve high availability, auto-scaling, redundancy, security, etc. Features supported by almost every cloud provider. Containerization also ensures

the security of the infrastructure. This will save a lot of costs and increase the reliability of the infrastructure.

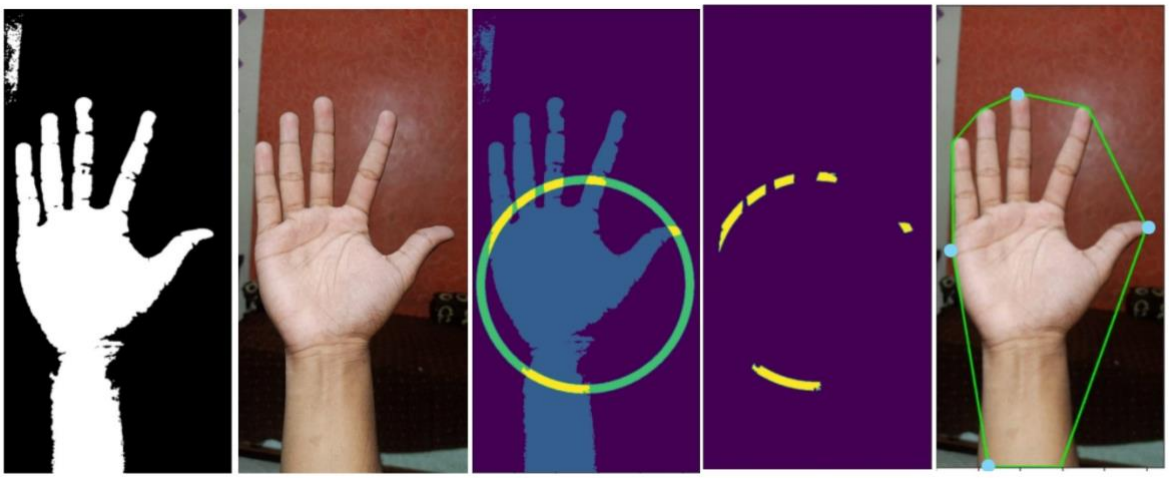
- Cloud-Ready: The development build is deployed using server-less Functions on Vercel but the Production build will be deployed on Kubernetes which again is supported by all major cloud Providers.
- Non-Relational and Containerized Database helps to scale the platform and saves costs and hassle.
- CI/CD: Integration of CI/CD pipelines Automates the build and Deployment process. Containerized applications increases the development cycle by using CI/CD pipelines. And automates Testing and deploying and updates/rollbacks, patching processes.



- Features of Front-end AI

- Face-Recognition Using HaarCascade: Haar Cascade classifier is based on the Haar Wavelet technique to analyze pixels in the image into squares by function. This uses "integral image" concepts to compute the "features" detected. Haar Cascades uses the Ada-boost learning algorithm which selects a small number of important features from a large set to give an efficient result of classifiers then use cascading techniques to detect the face in an image.

- Gesture Recognition : Detect Hand and count number of fingers using Convex Hull algorithm in OpenCV lib in Python.



- Advanced Audio analysis: Using Amplitude Array.

- Future Scope:
  - Smartphone detection & Multi-face distinguisher.
  - Using Tkinter GUI, but in industrial deployment there will be full fledged website portal.
  - Production Deployment on Kubernetes Engine on AWS/Azure. API authentication, more safety and security measures.