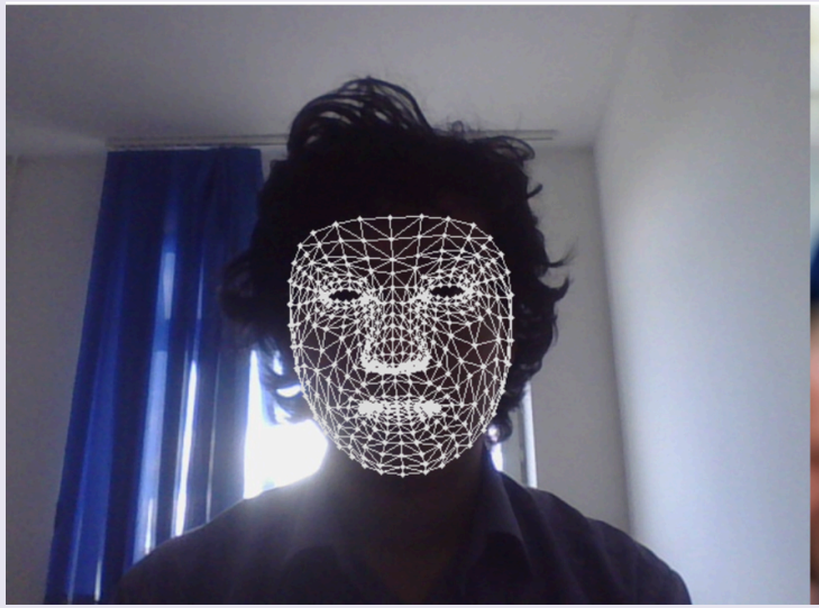
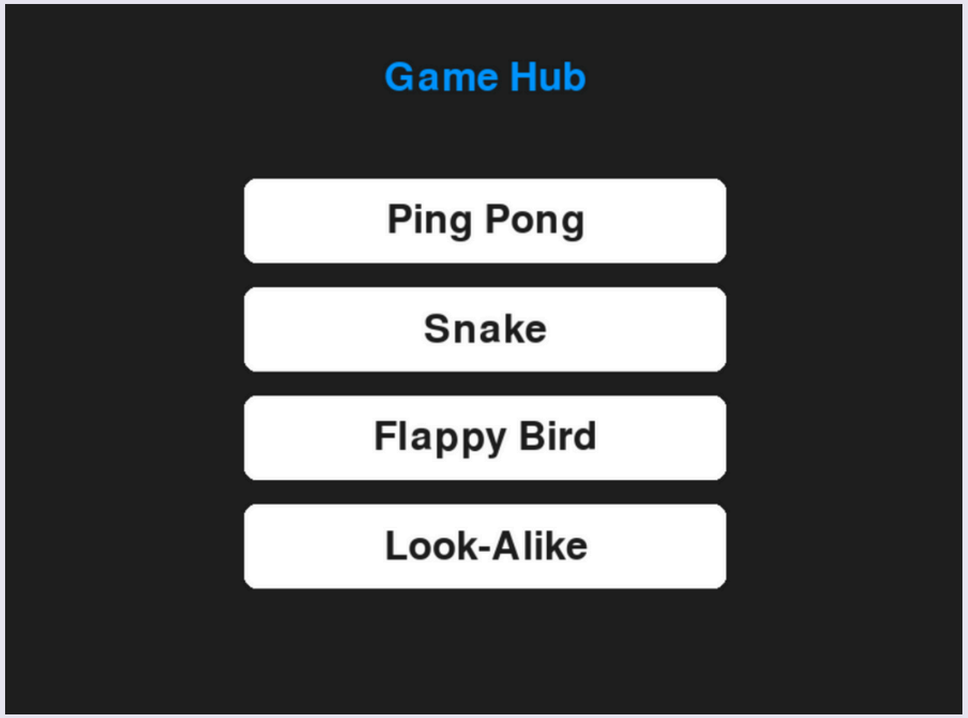
Games

Project



Presented by Zulkhairatuly Yerlan

Background (Фон проекта)



Why is this important?

The Face Game Hub project was developed as an innovative platform to showcase the capabilities of computer vision and camera-based control.

Instead of using traditional input methods like a keyboard or mouse, users interact with the games through facial expressions, head movements, and hand gestures.

The main goal was to create interactive mini-games that are fun, accessible, and powered by real-time machine vision technologies.

Goals

The primary goals of the Face Game Hub project were

Build a Collection of Mini-Games
Create fun, diverse games such as Face Pong, Pose Imitation, and Look-Alike Challenge.
Showcase Computer Vision in Action
Demonstrate how MediaPipe and OpenCV can be used in real-time applications.
Create an Intuitive Game Hub
Design a simple yet engaging interface using Pygame to launch each game easily.
Inspire Touchless UX
Explore potential uses for non-contact interfaces in gaming, education, and accessibility.

Project objective:

The objective of the Face Game Hub project is to design and implement an interactive platform that uses real-time face and gesture recognition to control a variety of mini-games.
It aims to blend entertainment with innovative computer vision technologies, providing a touchless and immersive user experience.

Objectives (Цели проекта)

What did we want to achieve?

01

Research on face detection methods:

Analysis and comparison of popular algorithms (Haar Cascade, MTCNN, DeepFace).
Evaluation of accuracy, speed of operation and resistance to various conditions (lighting, angle, noise).

02

Implementation of different game methods:

Snake
Look alike
Ping pong
Flappy Bird

03

Development of a user-friendly graphical interface (GUI):

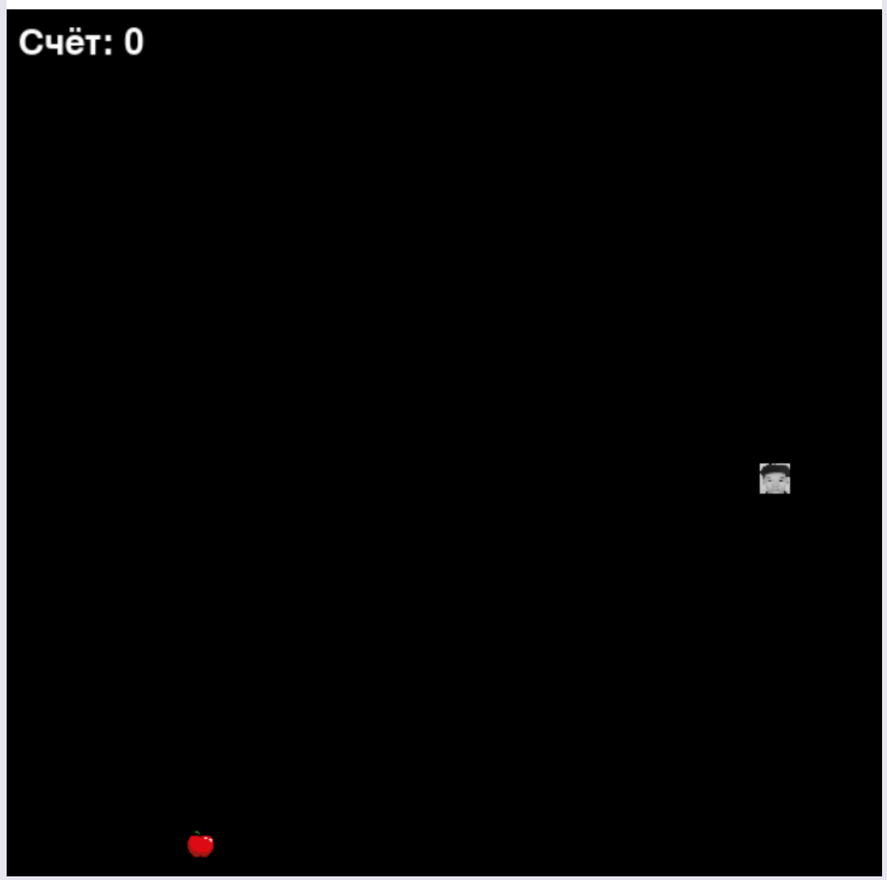
Pygame

04

Optimization of work for limited computing power:

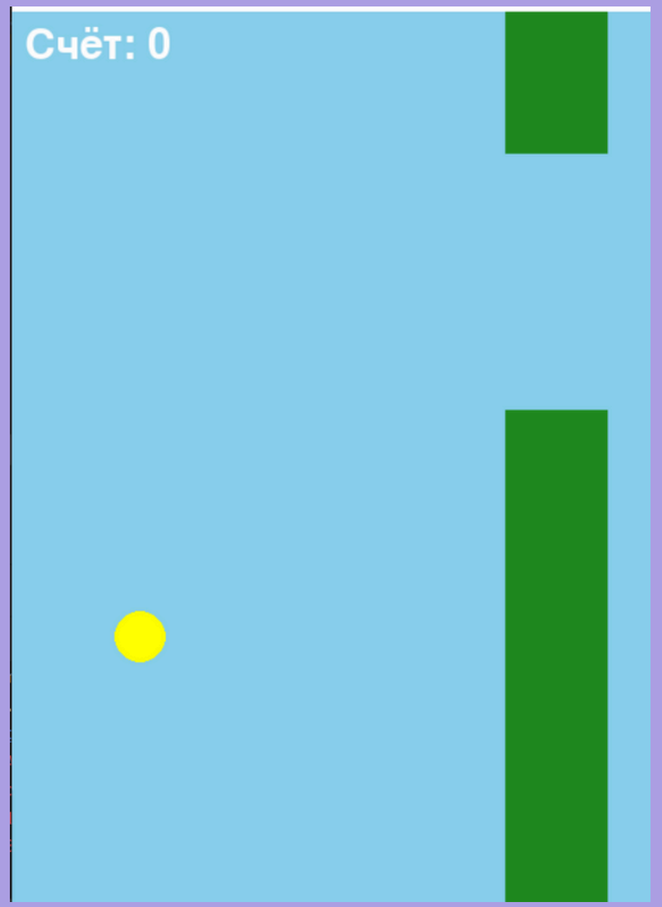
Designed to work without a powerful graphics processing unit (GPU).
Minimizing latency in real-time video processing.

Objectives (Цели проекта)



Technical aspects of implementation

Programming language: Python
Libraries: OpenCV, PyQt5, MTCNN, NumPy
Interface: PyQt5 (ability to select algorithms and adjust blur)
Working with video stream: Capture image from webcam, process each frame in real time
Optimization: Reduce CPU load by pre-processing image



Conclusion (Выводы)

Key findings of the project:

The Face Game Hub project demonstrates the potential of combining computer vision with interactive gameplay.

By integrating facial and gesture recognition using MediaPipe and OpenCV, the platform offers an engaging, hands-free gaming experience.

The modular design allows for easy expansion, while Pygame provides a flexible interface for visuals and interactivity.

This project serves as both a technical prototype and an example of how AI can be used in creative applications.

Practical value

Game