🧠 Project Title: AI Powered Gaze Tracking Using Facial Recognition Techniques

**📦 Project File Structure**

📁 Project Root

├── GazeTracking.py # Main file for gaze-based cursor control

├── utils.py # Eye/mouth aspect ratio and direction utils

├── test.py # Speech command handler

└── model/

└── shape\_predictor\_68\_face\_landmarks.dat # Dlib facial landmark model

**⚙️ Requirements**

* Python 3.6 or above
* Required Python packages:

pip install opencv-python dlib imutils numpy pyautogui SpeechRecognition pyaudio

* **Hardware**: Webcam and Microphone
* OS: Windows recommended for app execution (like Notepad, Word, etc.)

**▶️ Step-by-Step Project Execution**

**🔧 1. Initial Setup**

1. Download or clone the project files into a local folder.
2. Ensure shape\_predictor\_68\_face\_landmarks.dat is placed inside a folder called model.
3. Install dependencies as shown above using pip.

**🏃 2. Run the Main Program**

Execute the main script:

python GazeTracking.py

This:

* Launches the webcam.
* Activates gaze detection and tracking.
* Starts a background thread for voice command recognition.

**👁️ 3. Gaze Tracking Instructions**

| **Gesture / Detection** | **Action** |
| --- | --- |
| 👁️ Eye Wink (Left) | Left Click |
| 👁️ Eye Wink (Right) | Right Click |
| 👄 Open Mouth (Hold) | Toggle Input Mode (ON/OFF) |
| 👃 Nose Direction | Move Cursor (in Input Mode) |

* Move your **nose** in a direction after opening your mouth to control the cursor.
* The **rectangle** that appears marks the active region for input control.

**🗣️ 4. Speech Command Features**

Say these commands out loud while the program is running:

**✨ App & Web Actions**

* **"open youtube"** – Opens YouTube in Chrome
* **"open netflix"**
* **"open prime video"**
* **"open linkedin"**
* **"open whatsapp"**
* **"open vscode"** or **"open vs code"**
* **"open notepad"**
* **"open ms word"** or **"open word"**
* **"open excel"**
* **"open powerpoint"**
* **"open file explorer"**
* **"open start menu"**
* **"open task manager"**

**💬 Text Typing**

* **"type"** – Activates typing mode from speech  
  Say **"stop typing"** to exit this mode.

**🖱️ Mouse Actions**

* **"left click"**
* **"right click"**
* **"double click"**
* **"refresh"** – Presses F5 and exits context menu
* **"new folder"** or **"create new folder"**

**🗔 Window Controls**

* **"minimize window"**
* **"maximize window"**
* **"close window"**

**📋 Editing Commands**

* **"select all"**
* **"cut"**, **"cut this"**, **"cut text"**
* **"copy"**, **"copy this"**
* **"paste"**, **"paste here"**

**🔐 System Controls**

* **"lock screen"**

**🔁 Browser Tab Commands**

* **"new tab"**
* **"previous tab"**

If a command isn't recognized, it prints ❌ Command not recognized.

**❌ 5. Exit the Program**

You can exit the program in either of these ways:

* ✅ **Say**: **"close window"**  
  → This will close the currently active window using speech command.
* ✅ **Press**: Esc key  
  → This stops the webcam feed and terminates the application manually.

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