Eye-Guided Mouse Control
The Future Of User Interface

- **Execution Sequence**

To run this code in PyCharm, you will need to install the following packages:

1. OpenCV: You can install OpenCV by running '**pip install opencv-python'** in your terminal or PyCharm's terminal.

2. Mediapipe: You can install Mediapipe by '**running pip install mediapipe'** in your terminal or PyCharm's terminal.

3. PyAutoGUI: You can install PyAutoGUI by running '**pip install pyautogui'** in your terminal or PyCharm's terminal.

4. Here are the steps to execute the code in PyCharm:

5. Open PyCharm and create a new Python project.

6. Create a new Python file in the project and paste the code into the file.

7. Install the required packages by running the pip install commands mentioned above in your PyCharm's terminal.

8. Write the Python code for Eye-Guided Mouse Control The Future Of User Interface

9. Make sure your webcam is connected and working properly.

10. Run the Python file by clicking on the green arrow button on the top right corner of the code editor or by pressing the Shift+F10 key.

11. You should now see a window titled " Eye-Guided Mouse Control " with a live video feed from your webcam. If the code is detecting your eye movements, you should see green and yellow circles drawn around your eye landmarks.

12. To exit the code, press any key on your keyboard.

12. Note: Packages Versions

Numpy - 1.13.3

OpenCV - 3.2.0

PyAutoGUI - 0.9.36

- ## Source Code

```
import cv2
import mediapipe as mp
import pyautogui
cam = cv2.VideoCapture(0)
face_mesh = mp.solutions.face_mesh.FaceMesh(refine_landmarks=True)
screen_w, screen_h = pyautogui.size()
while True:
    _, frame = cam.read()
    frame = cv2.flip(frame, 1)
    rgb_frame = cv2.cvtColor(frame, cv2.COLOR_BGR2RGB)
    output = face_mesh.process(rgb_frame)
    landmark_points = output.multi_face_landmarks
    frame_h, frame_w, _ = frame.shape
    if landmark_points:
        landmarks = landmark_points[0].landmark
        for id, landmark in enumerate(landmarks[474:478]):
            x = int(landmark.x * frame_w)
            y = int(landmark.y * frame_h)
            cv2.circle(frame, (x, y), 3, (0, 255, 0))
            if id == 1:
                screen_x = screen_w * landmark.x
                screen_y = screen_h * landmark.y
                pyautogui.moveTo(screen_x, screen_y)
        left = [landmarks[145], landmarks[159]]
        for landmark in left:
            x = int(landmark.x * frame_w)
            y = int(landmark.y * frame_h)
            cv2.circle(frame, (x, y), 3, (0, 255, 255))
        if (left[0].y - left[1].y) < 0.004:
            pyautogui.click()
            pyautogui.sleep(1)
    cv2.imshow('Eye Controlled Mouse', frame)
    cv2.waitKey(1)
```