



# ExEEEd - Fabrication / Model Development

## Virtual Mouse

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# Aim & Objective

This chapter describes the eye-gaze control of multimedia systems. Several non-intrusive systems for recording eye movements, gaze locations, pupil size, and blink frequencies have been introduced in recent years.



# Problem Definition

There are so many people who will feel very discomfort to increase or to decrease the volume or the brightness of the system with their hand movements. So we came with the solution for this problem we can control our system like how the mouse will work without using of our hands. This problem have been solved by Just “Blinking Your Eyes.” Yes what you have listened is true we came with the solution for you. Let us how it will works:



# Design & Drawings of Prototype (Rough Sketches)

## System Requirements:

### I. Hardware Requirement

- Laptop or PC
- I3 processor system or higher
- 4 GB RAM or higher
- 100 GB ROM or higher

### II. Software Requirement

- Laptop or PC
- Windows 7 or higher
- PyCharm community Edition 2022.1.4
- Python (3.8 or 3.9 version)
- Opencv – python
- Media pipe
- Pyautogui

## Background of Idea (Who is it for?)

We observe that these days so many people like handicapped and old people are facing this problem to use their systems . We can see the benefits or solutions for their problem with our idea:

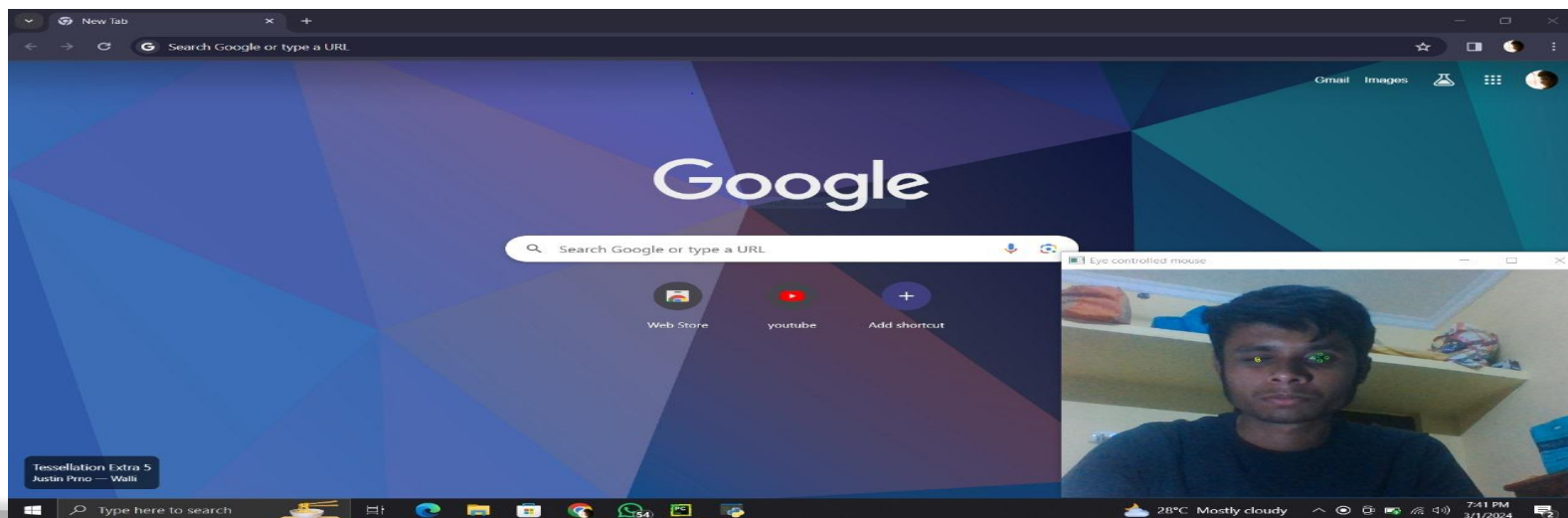
People can make this solution to operate their system and it makes their use easily without any discomfort for them. They can make video calls, sending mails etc. In one word we can say that we can make our eyes to work like mouse for operating the system. Let us see some advantages by using this technique:

- Saves time and efforts.
- The convenience of using different apps and tools.
- Wide variety/range of operations are available.
- Good results and easy approach.
- Get detailed information about the problem.



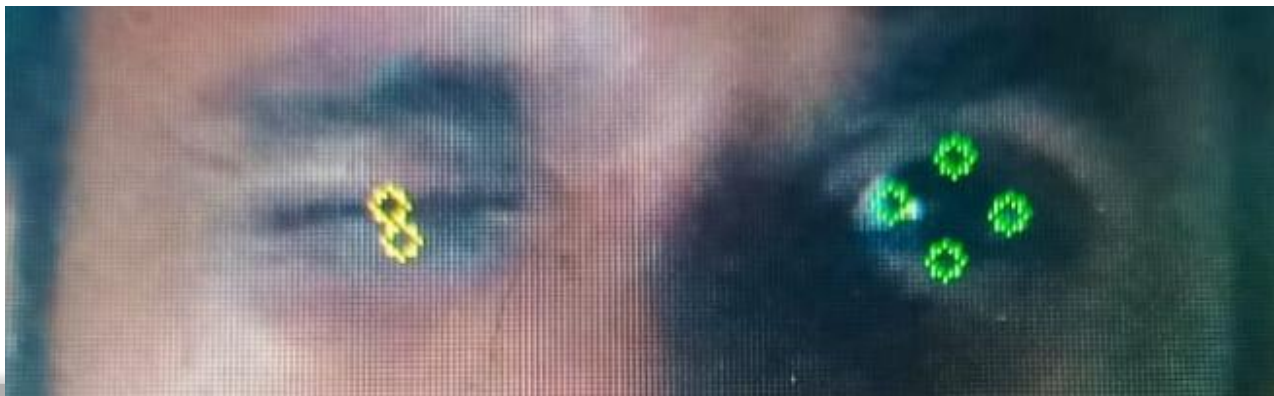
# Background of Idea (What will it do?)

We can compare various methods like using of mouse cursor etc, The working comparison with the help of our proposal here gathers information on working and other options. We can use various websites and presents it to the users. The users can also feel comfortable to use from the best options available. Even we can make different applications can use this by comparing website to study their competitors and form new strategies accordingly to attract new users and stay ahead of their competitors.



## Background of Idea (Working)

This Eye Control website for will help to compare the other from various apps and applications. This is easy to use and help in different operations. It works like an mini AI machine.



The image shows a screenshot of a Python IDE (likely PyCharm) running a program titled "Eye controlled mouse". The code in the main.py file is as follows:

```

22         screen_y = int(landmark.y * screen_h)
23         pyautogui.moveTo(screen_x, screen_y)
24     left = [landmarks[145], landmarks[159]]
25     for landmark in left:
26         x = int(landmark.x * frame_w)
27         y = int(landmark.y * frame_h)
28         cv2.circle(frame, (x, y), 3, (0, 255, 255))
29     if (left[0].y - left[1].y) < 0.004:
30         pyautogui.click()
31         pyautogui.sleep(1)
32     cv2.imshow('Eye controlled mouse', frame)
33     cv2.waitKey(1)
34
35

```

The IDE's Run console shows the following output:

```

Run: main x
"D:\srikar\py projects\venv\Scripts\python.exe" "D:\srikar\py projects/main.py"
INFO: Created TensorFlow Lite XNNPACK delegate for CPU.

```

On the right side of the IDE, there is a video feed window titled "Eye controlled mouse" showing a person's face. Two green circles with yellow dots in the center are overlaid on the person's eyes, indicating the eye-tracking system is active.

The Windows taskbar at the bottom shows the system time as 7:40 PM on 3/1/2024, with a temperature of 28°C and weather conditions of Mostly cloudy.



# Business Model Canvas

Created by virtual mouse using eye tracking

Designed via [AtexSoft BMC Tool](#)

<b>Key Partnerships</b> <ul style="list-style-type: none"> <li>- Dell, HP, or Lenovo</li> <li>- NVIDIA or AMD</li> <li>- pyCharm</li> <li>- ASUS or Acer</li> <li>- McAfee</li> <li>- Amazon or Best Buy</li> <li>- Sidisoft or Pluralsight</li> </ul>	<b>Key Activities</b> <ul style="list-style-type: none"> <li>- Market Research</li> <li>- Define Objectives and Scope</li> <li>- Form Strategic Partnerships</li> <li>- Conceptualization and Design</li> <li>- Hardware Integration</li> <li>- Software Development</li> <li>- Testing and Quality Assurance</li> <li>- Security Measures</li> <li>- Marketing and Launch</li> <li>- Feedback and Iteration</li> <li>- Continuous Improvement</li> </ul> <b>Key Resources</b> <ul style="list-style-type: none"> <li>- Eye Tracking Hardware and Software</li> <li>- Software Development Tools</li> <li>- Human Expertise in Eye Tracking Technology</li> <li>- User Interface (UI) and User Experience (UX) Designers</li> <li>- Accessibility, Legal and Regulatory Expertise</li> <li>- Marketing and Sales Team</li> <li>- Quality Assurance (QA) Team</li> </ul>	<b>Value Propositions</b> <ul style="list-style-type: none"> <li>- Natural Interaction</li> <li>- Enhanced Accessibility</li> <li>- Efficiency and Speed</li> <li>- Reduced Physical Strain</li> <li>- Hands-Free Operation</li> <li>- Inclusive Design</li> <li>- Reduced Cognitive Load</li> <li>- Facial Recognition and Authentication</li> <li>- Customization and Personalization</li> </ul>	<b>Customer Relationships</b> <ul style="list-style-type: none"> <li>- Intuit in laptops</li> <li>- external app</li> <li>- windows operation</li> </ul> <b>Channels</b> <ul style="list-style-type: none"> <li>- advertising</li> <li>- posting in social media</li> <li>- demo trials in innovation hubs</li> </ul>	<b>Customer Segments</b> <ul style="list-style-type: none"> <li>- physically handicaps</li> <li>- old age people</li> <li>- young aspirants of VR</li> <li>- NO COMPETITORS BECAUSE VIRTUAL MOUSE USING EYE TRACKING IS NOT YET IMPLEMENTED IN COMPUTERS OR LAPTOPS</li> </ul>
<b>Cost Structure</b> <ul style="list-style-type: none"> <li>- Eye Tracking Technology - 50,000/- to 80,000/-</li> <li>- hardware cost - 500/- to 2000/- (depends on webcam company)</li> <li>- developers and engineers - 2,00,000/- to 5,00,000/-</li> <li>- Marketing and Promotion - 1,00,000/- to 3,00,000/-</li> <li>- Testing and Quality Assurance - 10,00,000/-</li> <li>- Legal and Compliance - 50,000/-</li> <li>- Customer Support - 50,000/- to 1,00,000/-</li> <li>- Infrastructure and Technology - 50,00,000/- to 1,00,00,000/-</li> <li>- operational cost - 50,000/-</li> <li>- Total Estimated Cost Range : 4,00,00,000/- to 5,00,00,000/-</li> </ul>		<b>Revenue Streams</b> <ul style="list-style-type: none"> <li>- product sale</li> <li>- direct manufactures</li> <li>- Subscription Model</li> <li>- Licensing and Royalties</li> <li>- Partnerships and Collaborations</li> <li>- Advertising and Data Monetization</li> <li>- Government and Research Grants</li> <li>- Event Sponsorship</li> </ul>		

# Conclusion

We can conclude that this website saves time to a large extent as you compare with other uses. It is easy to apply at affordable prices. Generally, in different systems, different applications can be done. This is how we can conclude the problem solution in operating the systems.

## Books and Journals:

S. Mitra and T. Acharya, "Gesture Recognition: A Survey," IEEE Transactions on Systems, Man, and Cybernetics, Part C (Applications and Reviews), vol. 37, no. 3, pp. 311-324, May 2007.

D. Hansen and Q. Ji, "In the Eye of the Beholder: A Survey of Models for Eyes and Gaze," IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 32, no. 3, pp. 478-500, March 2010.

## Websites:

"How Virtual Mice Work," HowStuffWorks. [Link](#)

"The Future of Touchless Technology," Forbes. [Link](#)

*Thank  
you!*