

# CANVA DESIGN

## POSTER



### ARDUINO BASED HAND GESTURE CONTROL OF COMPUTER

IT5052, Internet of Things, CIE-3  
Patel Yashasvi(), Javiya Dhruv()  
Asha M. Tarsadia Institute of Computer Science and Technology  
Uka Tarsadia University



#### ABSTRACT

Gesture-based interaction is gaining popularity in workplaces and homes. This project develops a low-cost system using Arduino UNO and Ultrasonic Sensors to recognize hand gestures for computer interaction. Python (PyAutoGUI) processes sensor data to simulate keyboard and mouse operations, providing a touchless control alternative.

#### INTRODUCTION

Commercial gesture control systems like Leap Motion are costly. This project offers an affordable, open-source solution using Arduino UNO and ultrasonic sensors. Two sensors detect hand distance, processed by Arduino, which sends commands to a Python script to execute actions like scrolling, switching tabs, or media control.

#### USECASE



#### REQUIREMENTS



**Hardware**

- 1. Ultrasonic Sensors x 2
- 2. Breadboard
- 3. Arduino Uno x 1
- 4. USB Cable for Arduino connection
- 5. Laptop with internet connection
- 6. Breadboard

**Software**

- 1. Python IDE
- 2. Arduino IDE

#### CONNECTION AND SETUP



1. Attach the ultrasonic sensors to the laptop screen (left and right corners).
2. Connect sensors to Arduino UNO.
  - Left Sensor: Trig to Pin D2, Echo to Pin D3.
  - Right Sensor: Trig to Pin D4, Echo to Pin D5.
3. Connect Arduino UNO to the computer via USB.
4. Run the Arduino code to detect gestures and send data to the serial port.
5. Run the Python script to read commands and execute functions on the system.

#### RESULT

The system successfully detects hand gestures and translates them into corresponding system actions. The following gestures are implemented:

- Swipe right → Switch to next tab.
- Swipe left → Switch to previous tab.
- Move hand closer → Scroll up.
- Move hand away → Scroll down.
- Swipe across both sensors → Switch between tasks.

#### CONCLUSION

This project demonstrates an effective and low-cost solution for gesture-based computer interaction using Arduino and Python. It enables hands-free control, enhancing accessibility and usability. The system can be extended to voice integration, AI-based gesture prediction, and improved accuracy through machine learning models.

#### FUTURE SCOPE

- Additional Gestures: Incorporating more hand movements for advanced functionality.
- Bluetooth/Wireless Communication: Making the system more portable.
- Voice Assistance Integration: Combining gestures with voice control for enhanced interaction.

#### PROCESS



## EBOOK COVER



## LOGO




## ADVERTISING





## BOOTCAMP DESIGN

The poster features a dark blue background with a starry space theme. At the top left is the Asha M. Tarsadia Institute of Computer Science and Technology logo. The main title 'BOOTCAMP ON' is in large white letters, followed by 'CHATBOT DEVELOPMENT WITH PYTHON' in glowing pink letters. A date box on the left shows 'JUL 27' and '9 AM - 3:30 PM'. A registration box on the right says 'REGISTER NOW' and 'Fee 200 INR'. The location is listed as 'DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING, AMTICS-BUILDING, UKA TARSADIA UNIVERSITY'. At the bottom, there are two large dark blue rounded rectangles, likely for contact information, and a small illustration of a robot and the Python logo.

 **ASHA M. TARSADIA INSTITUTE OF  
COMPUTER SCIENCE AND TECHNOLOGY**

**BOOTCAMP ON**

**JUL  
27**  
9 AM - 3:30 PM

**CHATBOT  
DEVELOPMENT  
WITH PYTHON**

**REGISTER  
NOW**  
Fee  
200 INR

DEPARTMENT OF COMPUTER SCIENCE AND  
ENGINEERING, AMTICS-BUILDING  
UKA TARSADIA UNIVERSITY

