Project 1:

Virtual Mouse with Hand Tracking (Personal Project)

Developed a virtual mouse application using Python libraries like OpenCV, MediaPipe, and Autopy. This project allows users to control the mouse cursor and interact with on-screen keyboards through hand gestures captured by a webcam.

Challenges Overcome:

Enhancing Click Precision: Successfully addressed initial issues with click accuracy by implementing pixel rounding techniques.

Focus on User Experience:

Optimized User Comfort: Prioritized ergonomic design by testing various configurations to ensure smooth and comfortable hand tracking for extended use.

Key Skills Demonstrated:

Computer Vision Techniques with OpenCV and MediaPipe

Python Programming and Library Integration

User Interface (UI) Design and Usability Considerations

Project 2 :

Arduino Sumo Bot (University Project)

Overview:

I built and programmed a competitive Sumo Bot using an Arduino Uno microcontroller. This project allowed me to delve into the exciting world of robotics, fusing Arduino programming, sensor integration, and strategic motor control.

Key Skills Demonstrated:

Arduino Programming: Implemented functionalities for sensor data processing, motor control algorithms based on sensor readings, and strategic maneuvers during combat.

Sensor Integration: Utilized ultrasonic sensors for distance measurement (avoiding arena boundaries) and infrared sensors for line detection (maintaining position within the ring).

Problem-Solving: Throughout the construction and programming phase, I encountered challenges (e.g., sensor calibration, motor control optimization) that I successfully addressed.

Project Highlights:

Successfully built and programmed a functional Sumo Bot using Arduino Uno.

Implemented sensor data processing for real-time decision-making during combat.

Integrated ultrasonic and infrared sensors for comprehensive environmental awareness.

This project provided valuable hands-on experience in robot design, sensor integration, and basic robot programming principles.

Project 3

Word Counter (Personal Project)

Overview:

Developed a user-friendly Word Counter application using Python. This tool efficiently analyzes plain text files within a directory, providing valuable word count statistics for developers, writers, and anyone working with textual content.

Key Features:

Efficient Word Counting: Accurately calculates the word count within individual text files and generates a comprehensive report summarizing the total word count for the entire directory.

Simple User Interface: The script requires users to specify the target directory containing the text files, offering a straightforward user experience.

Technical Skills:

Python Programming: Utilized Python constructs to process text files, extract word counts, and generate reports.

Command-Line Interface (CLI): Designed the Word Counter as a command-line script, facilitating easy integration into existing workflows.

This project demonstrates my proficiency in Python programming and my ability to create practical tools for real-world applications.