AI – Powered Kiosk

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Elevator Pitch

Businesses like drive-thru restaurants, hotels, and airports face a problem with creating smooth and inclusive communication experiences for all customers. So, for these businesses, who need a solution that supports diverse communication needs, our **AI Kiosk** is a real-time communication platform that interprets both voice and sign language. Unlike standard kiosks, our product is fully automated and accessible to people with disabilities, ensuring a seamless and user-friendly experience across various industries.

Objective

Enhance Accessibility: Develop an AI-powered communication device to facilitate seamless interaction for individuals with special needs, enabling communication through voice commands and sign language.

User-Friendly Design: Create an intuitive and straightforward interface tailored to meet the needs of elderly users and individuals unfamiliar with complex technologies.

Real-Time Communication: Employ advanced AI algorithms for instant processing and accurate interpretation of user inputs, ensuring efficiency in high-traffic environments.

Adaptability and Sustainability: Design the device to function effectively in various environmental conditions while maintaining energy efficiency and minimal maintenance requirements.

Facing constraints:

Operation Distance: we successfully built a program that detects objects that come to the Kiosk within a range of 1.5 to 3 meters.

Response Time: Communication is within a reasonable time (not more than 2s)

Budget: The budget is around 3000SR per machine.

How we met the specifications:

Accessibility: We have tested the model, and it recognizes voice commands for Arabic and English and sign language.
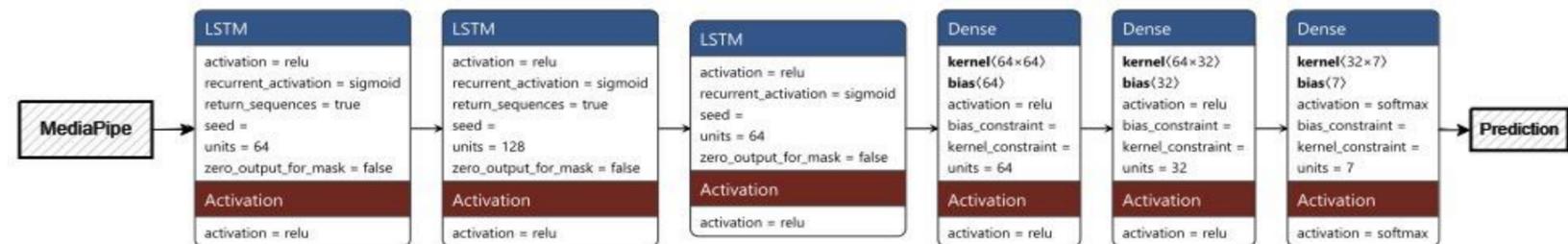
Power Consumption: Operates under specific power threshold (<100W) as we will only be using raspberry pi 5 and a monitor,

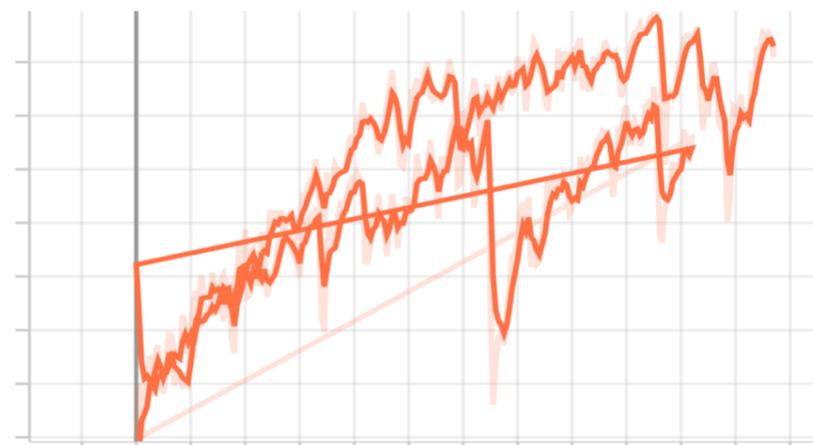which will not exceed that threshold.

UI Design Flow Chart
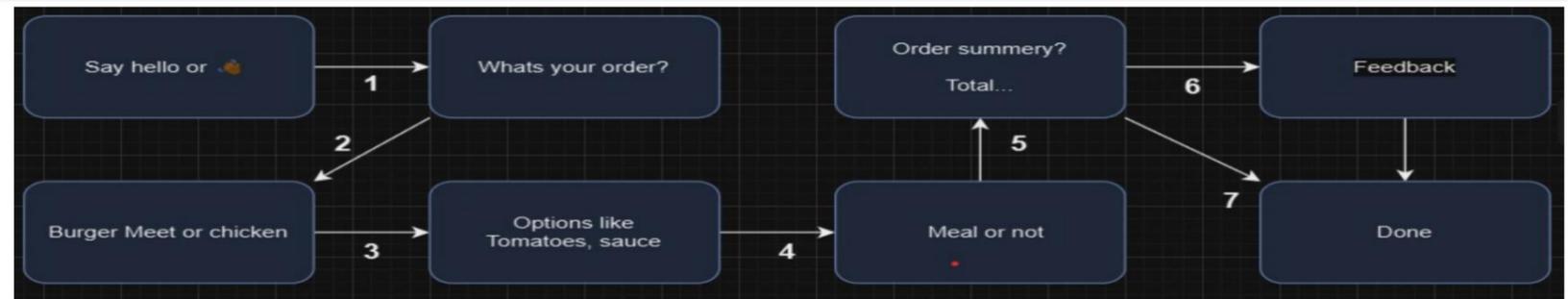
Sign Language model Layers

Validation and Verification


```
multilabel_confusion_matrix(ytrue, yhat)

array([[[ 7,  0],
        [ 0,  4]],

       [[10,  1],
        [ 0,  0]],

       [[ 8,  0],
        [ 0,  3]],

       [[10,  0],
        [ 0,  1]],

       [[ 8,  0],
        [ 1,  2]]], dtype=int64)

accuracy_score(ytrue, yhat)

0.9090909090909091
```