



# A Multilingual Access Kiosk Assistant

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## Motivations

Imagine being in an airport where travelers from all over the world converge, each speaking a different language. Communication becomes a major challenge, hindering the flow of essential information and services. Our project aims to break down these language barriers, creating a seamless and inclusive environment where travelers and refugees can easily access vital information and assistance.

## Problem

In diverse environments like airports and refugee centers, language barriers create significant obstacles to effective communication. This can lead to confusion, delays, and frustration among travelers and refugees seeking important information or services. Our solution seeks to address this problem by developing a user-friendly kiosk that can interpret multiple languages in real-time, providing accurate responses and improving accessibility for all.

# Solution

## Backend

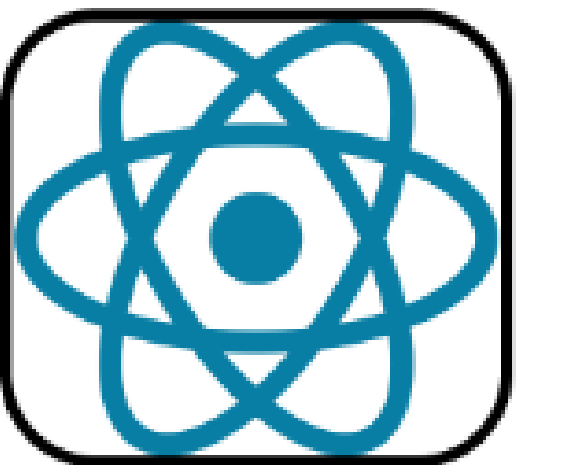


The backend process involves training the NLP model using a structured JSON file. Upon receiving user queries as audio input, the system converts them to text. The origin language is stored, then translated to English and undergoes language detection (English, French, and Spanish). The NLP model recognizes patterns in the text, followed by keyword matching to determine the response. The text response is then translated back to the original language. The text, once determined, is then translated back to the original language and spoken out to the user as an audio output.



## Frontend

The development team will utilize React to transform wireframe designs into functional UI elements for the access kiosk assistant. Leveraging React's component-based structure, the team will create reusable UI components like modals, input buttons, and interactive response displays. This approach ensures a consistent and user-friendly design, simplifying development and maintenance. React's virtual DOM enables efficient management and updating of webpage components, ensuring smooth rendering of dynamic content.



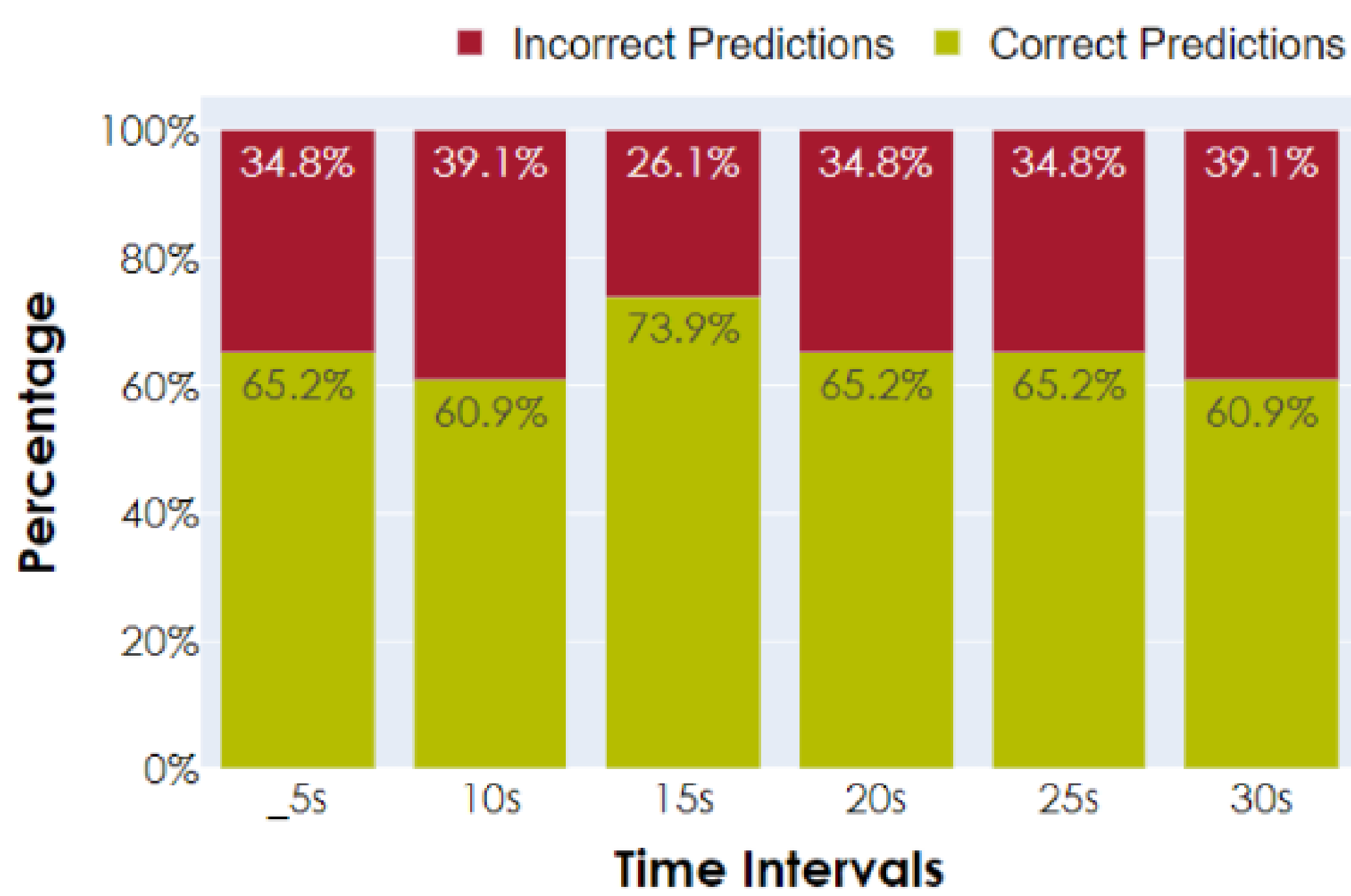
## Avatar



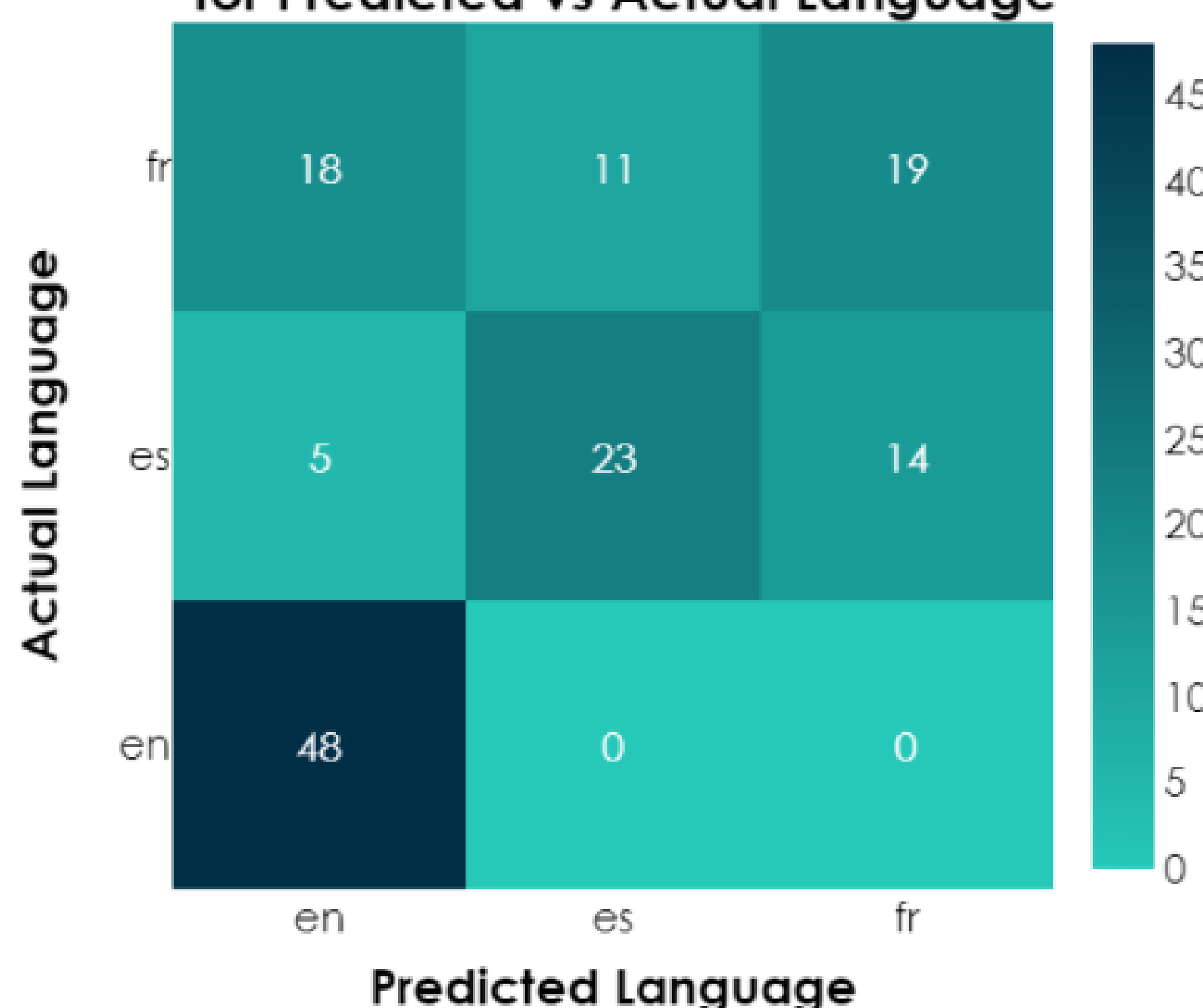
We made a deliberate choice to integrate a human-like avatar as a key component of our kiosk interface. This decision stemmed from extensive research highlighting the significant impact of familiarity on user engagement, particularly in interactions involving virtual avatars. Studies consistently demonstrate a positive correlation between users' perception of human-likeness in avatars and their willingness to engage with such systems. Additionally, during user evaluations, our avatar led to users ranking 'friendliness' higher than all other system characteristics tested. While exploring various avatar designs, we carefully considered alternatives, yet we ultimately opted for a human-resembling avatar due to its proven effectiveness in fostering user engagement and instilling a sense of comfort and familiarity.

# Results

## Audio File Testing

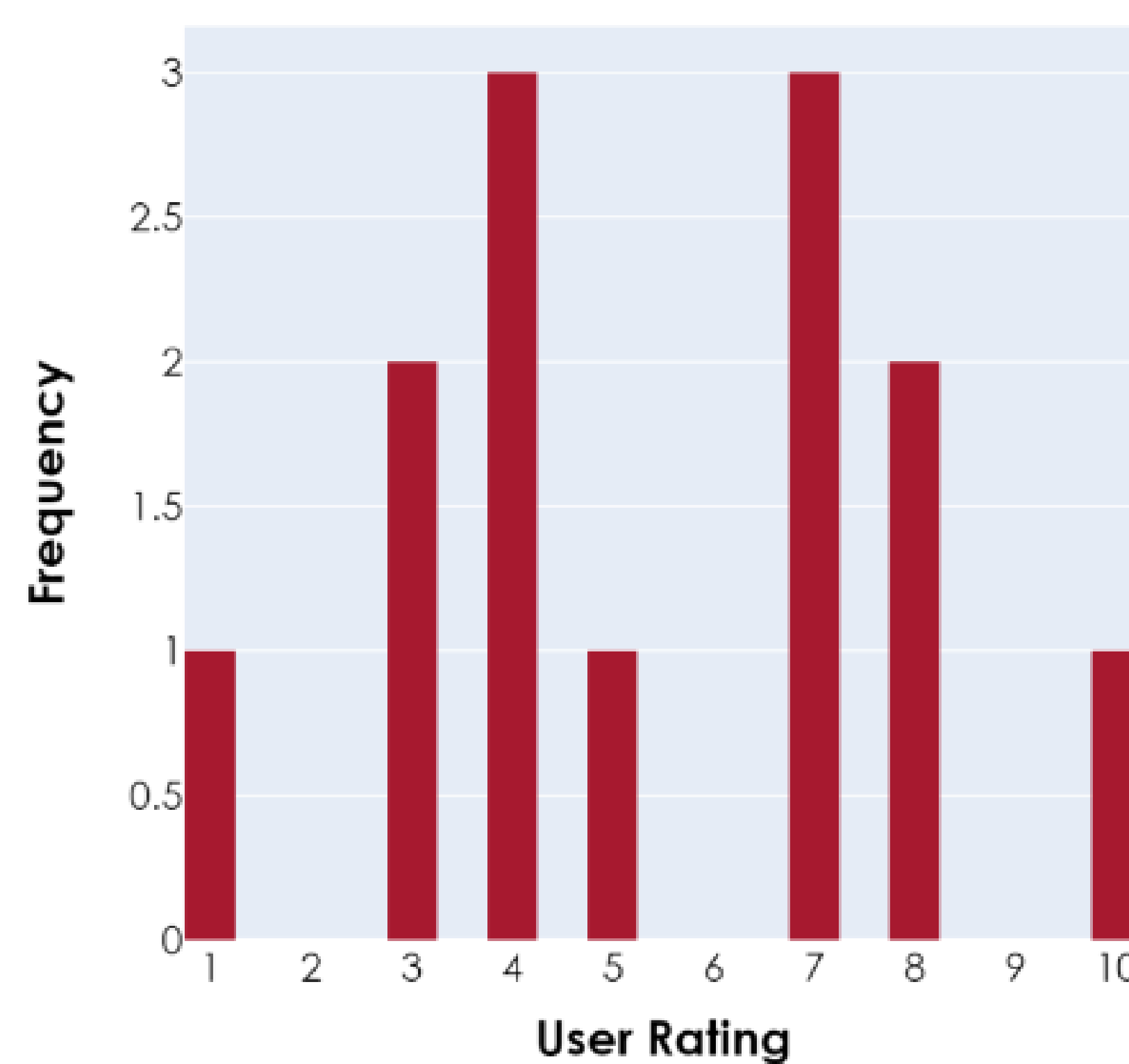


Combined Confusion Matrix for Predicted vs Actual Language

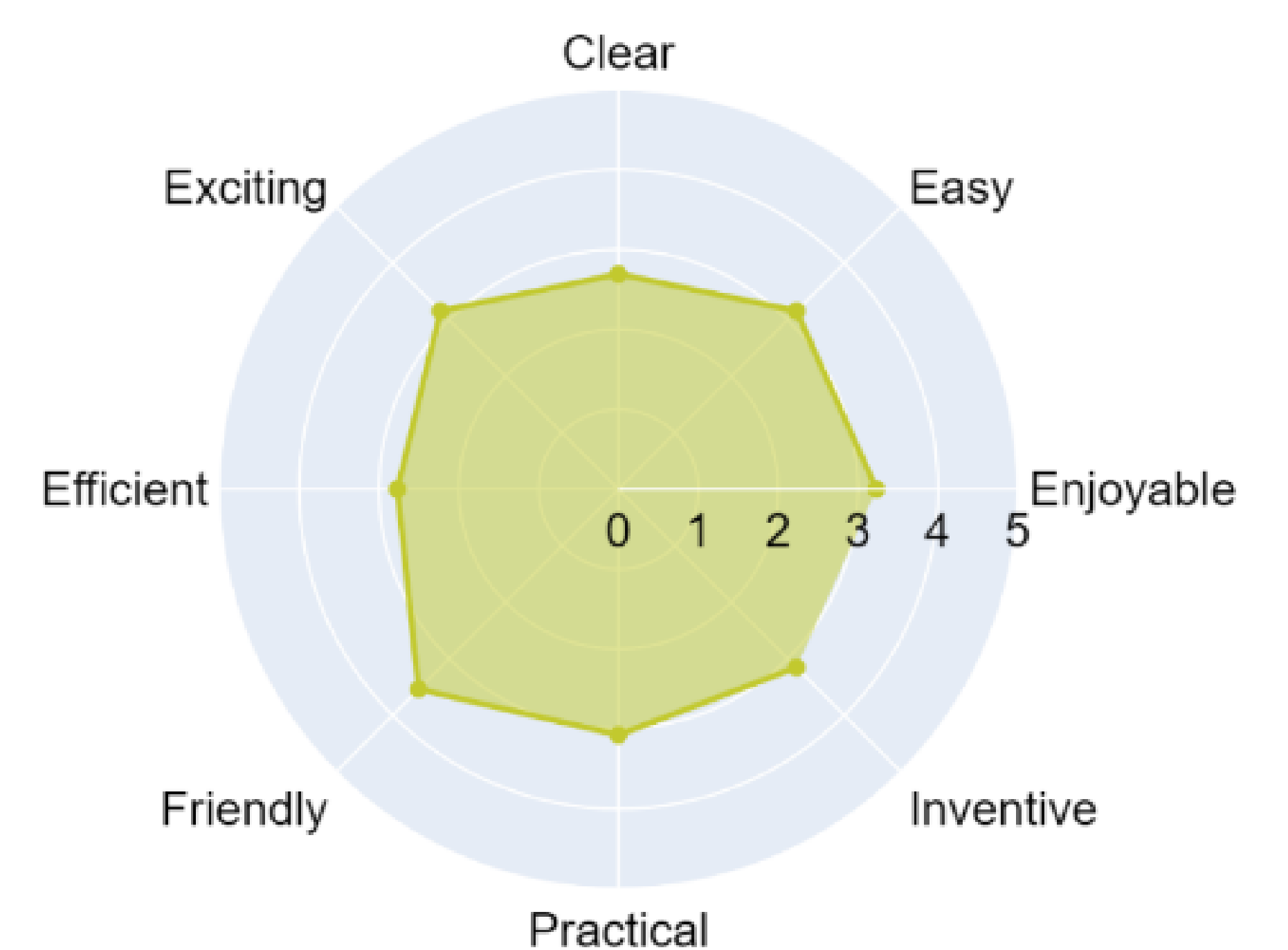


## User Experience

Overall User Satisfaction Survey Response



User Interface Assessment Radar Plot



# Acknowledgements

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