REAL-TIME SIGN LANGUAGE TRANSLATION

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WHY SignPAL?

Problem Definition

- Inspired by the need for better communication tools for non-verbal individuals.
- Bridging communication gap between non-verbal individuals and the people around them.

WHAT IS SignPAL?

- Application that translates sign language gestures into real-time English captions
- Anyone around a non-verbal person can simply open the app, click on record, and translate sign language into closed captions in English as it is being signed.

FEATURES

- Real-Time Sign Language Translation
- User-Friendly Interface
- Web-Based Application
- Prototype Trained on Common Words
- Expandable Vocabulary
- Inclusivity Focus
- Real-Time Camera Integration

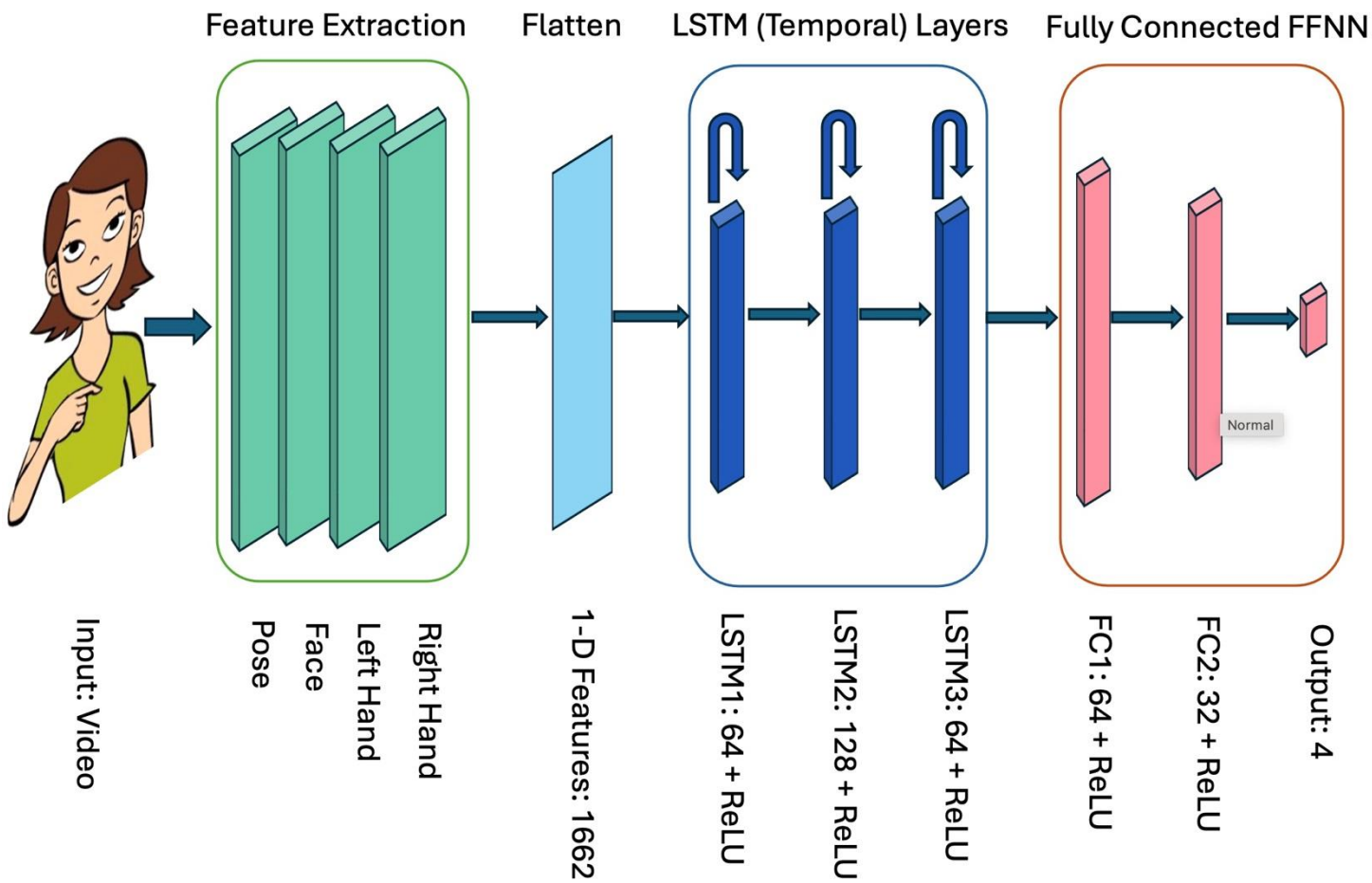
TARGET AUDIENCE

- Friends and Family of Non-Verbal Individuals
- Caregivers and Healthcare Providers
- Educators and Special Needs Instructors
- Public Service Providers
- Community Members

TECHNOLOGICAL GAPS

- Existing Sign Language translation solutions are letter based.
- Letter based sign-language solutions lacks the flow of communication.

ARCHITECTURE DIAGRAM



TECHNOLOGY

- Developed using Deep Learning techniques.
- Used Mediapipe framework to recognize real-time sign language gestures.
- Trained the model using TensorFlow, LSTM architecture.
- Incorporated OpenCV for video processing and real-time gesture capturing.
- Used Streamlit to deploy the web application.

DATA CREATION

- Data created for a small sample set of words such as Hello, how, you, fine
- Dataset size: 120 videos

PROTOTYPE ACCOMPLISHMENTS

- Translates 5 common sign language gestures into text in real-time.
- Hosted on web application
- User friendly user interface

CHALLENGES

- Finding Sign language **word** dataset
- High model training time
- Ensuring real-time performance

CONCLUSION

Future Scope:

- Extended Vocabulary
- Speech output integration
- Multi language support
- Domain specific training of model

As the project evolves, we hope to contribute to a more connected and compassionate community

THANK YOU