



# TELEMEDICINE: SIGN LANGUAGE ON THE EDGE

Providing equitable access to healthcare



01

# PROBLEM STATEMENT

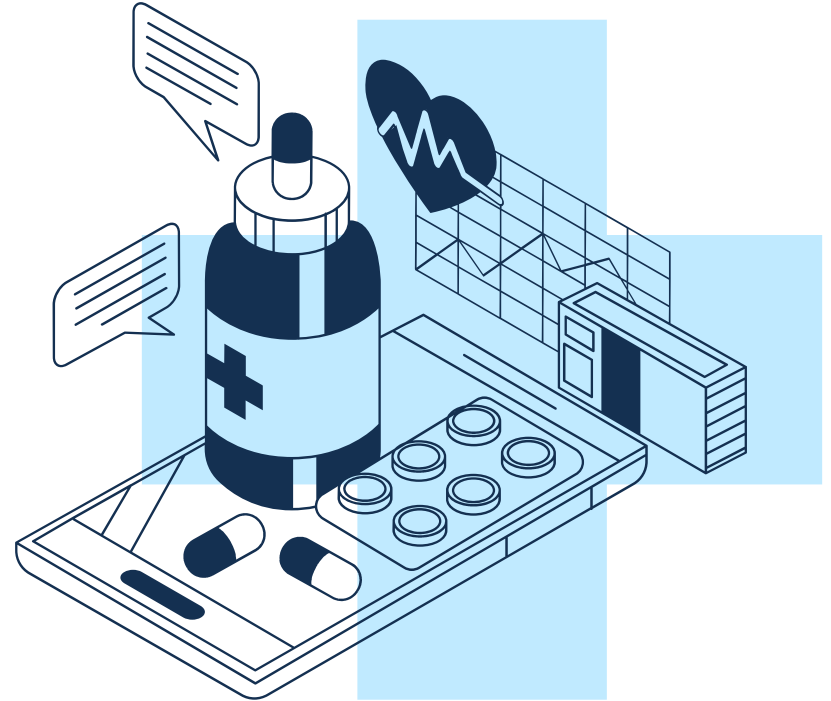


Inequality of the Disabled

# PROBLEM STATEMENT

The community that communicates primarily using sign language are under-served in healthcare due to language barriers. External help in the form of interpreters is often required but it is costly and not readily available.

**How can we improve accessibility to healthcare for this community and contribute to UN SDG 10: Reduced Inequalities?**





# PROBLEM IMPACT



## Language Barrier

Negative implications for delivery of healthcare and patient satisfaction

(Hilal et al., 2020)



## Lack of Interpreters

Deaf patients struggle to get interpreters in medical emergencies

(Branswell & Herper, 2019)



## Limited Access

Face barriers when accessing healthcare, limited options to choose from

(Kuenburg et al., 2015)

## 02

## SOLUTION



Demo: <https://tinyurl.com/beyondml-demo>



# SOLUTION



## MEDIAPIPE: HOLISTIC

Captures key points in hand movements and decodes them to a sequence of actions



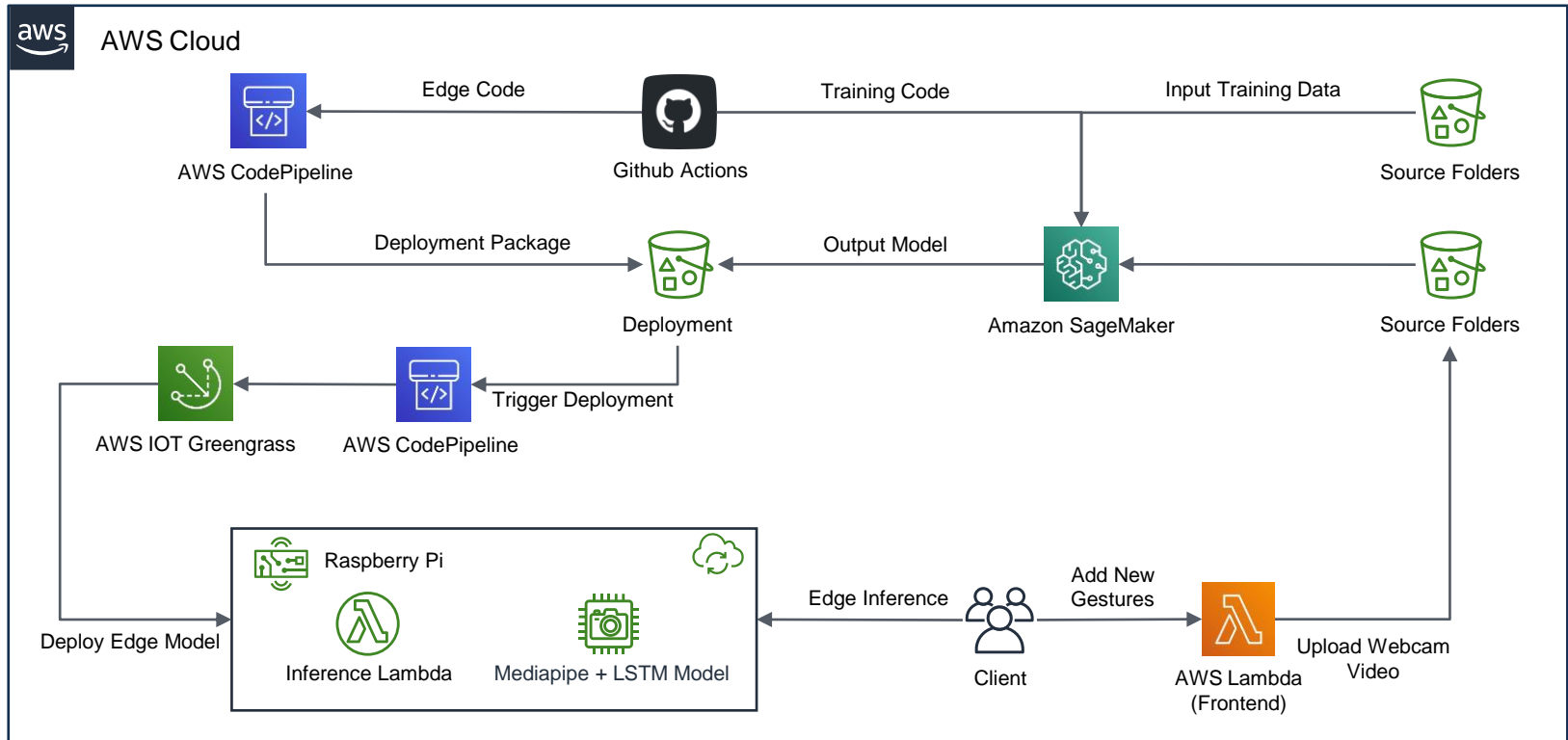
## TENSORFLOW: LSTM

Recognises the sequence of action from MediaPipe to output words



# PROPOSED MLOPS DEPLOYMENT

End to End Automated Training, Deployments & Re-Training



# + MODEL DEPLOYMENTS



## Video UI\*

Allows users to  
contribute videos to  
the model



## RPI Edge Device

Allows inference on  
the edge without a  
connection to the  
internet



## PC Deployment

View text output for  
actions inferred by  
the model

\* Proposed



# 03

## IMPACT



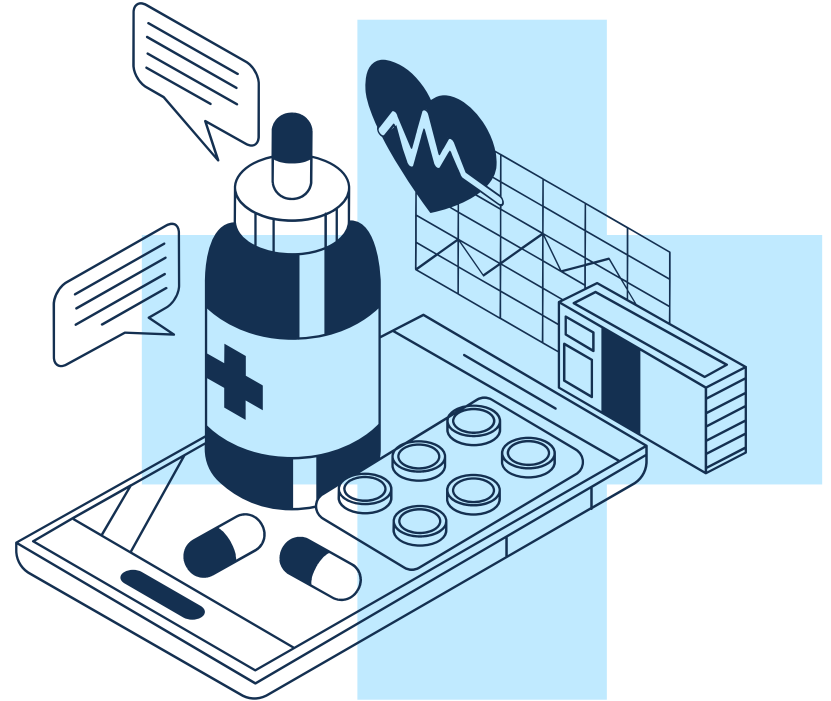
Improving Accessibility



# POTENTIAL IMPACT

This solution has wide ranging impact for the accessibility to healthcare especially in times of high occupancy where interpreters might not be available.

Telemedicine increased over 38X pre-pandemic and the change is here to stay. This solution makes telemedicine accessible to those who need it.





# 24 minutes

Reduction in Time Spent per Patient per Visit

# 70 million

people using sign language worldwide



# THANKS

Do you have any questions?

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