

# Virtual Speech Therapy



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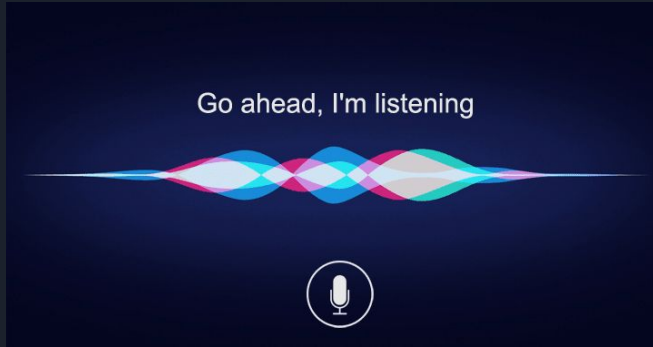
“Nearly 5 percent of U.S. children ages 3-17 have had a speech disorder in the past 12 months.”  
(NIDCD, 2016)



# Product Design

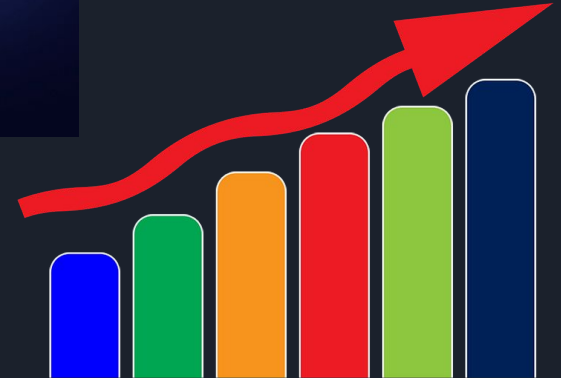


Users can access app from anywhere. Integrated Lex chatbot provides phrases for user to repeat



Listens for misarticulation, mispronunciation, and memory retention errors

Users can track progress over time



# Usage Example



“Start”

“Repeat after me: I am feeling very happy today”



“I am fee-rr-ing v-i-irry hap-p-p-y tod-ay”

“Close, try just this: I am fe-e-l-ing”



“I am fe-eling”

“Great, next: V-e-ry hap-py today”



“V-e-ry hap-py today”

“Great, let’s try another one: Last night we had  
pizza for dinner”



“Quit”

# Features - Mobile App



Secure user login

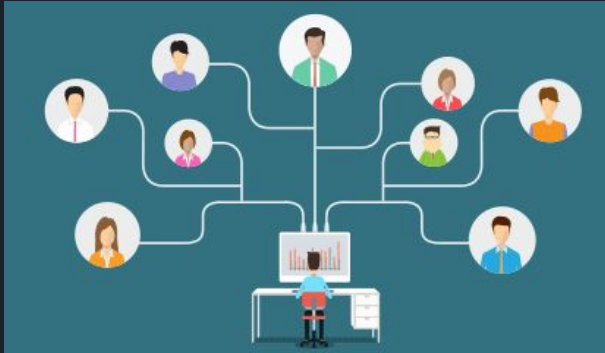


Start/Stop therapy,  
Repeat/Skip phrase

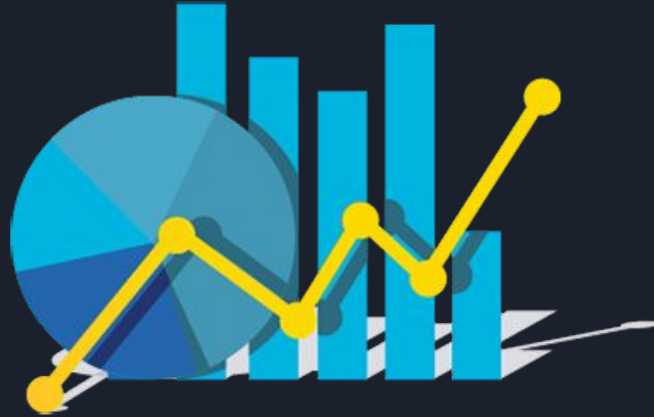


View feedback and  
track progress

# Features - Website



Securely connect to view multiple user profiles



Track user progress



Add phrases for users to practice



# Services Used



## **AWS Mobile SDK/Hub**

Build mobile app



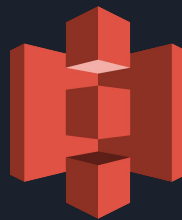
## **Amazon Lex**

Integrate app chatbot to listen and respond to user



## **AWS Lambda**

Control how chatbot analyzes user response



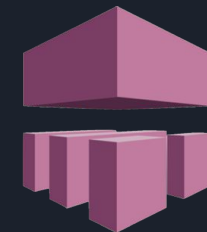
## **Amazon S3**

Store and host web front end site



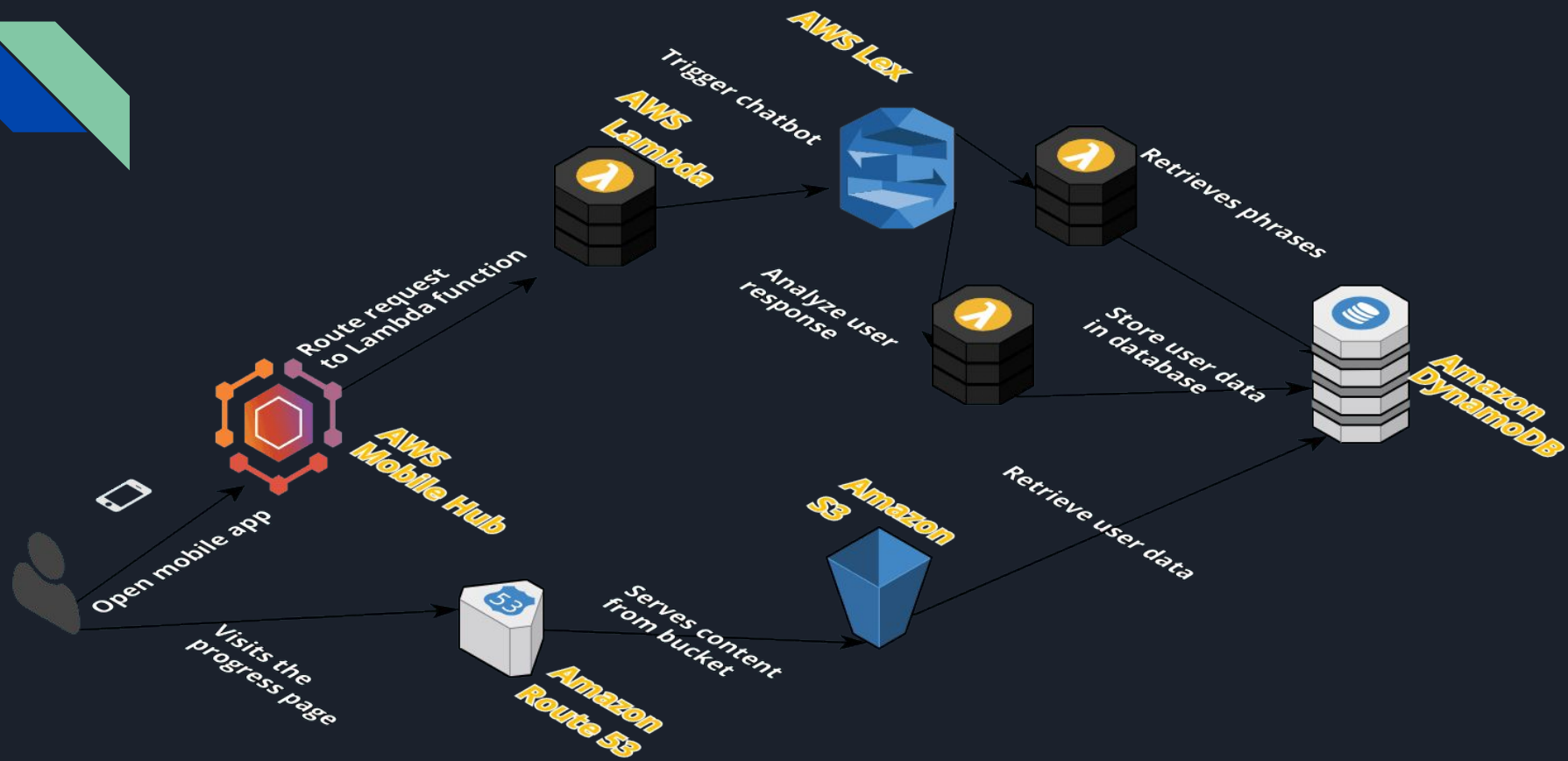
## **Amazon DynamoDB**

Store user data and phrases for chatbot



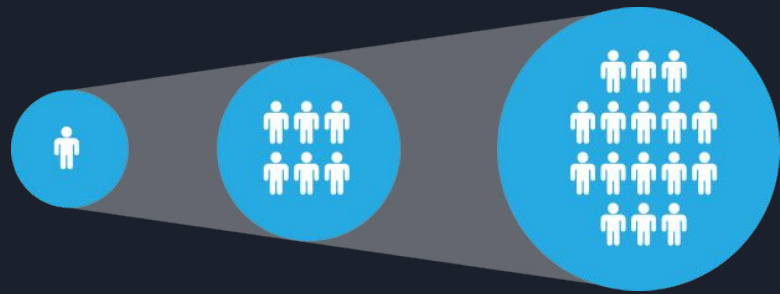
## **AWS Device Farm**

Remotely test mobile app





# Scalability



- DynamoDB has max capacity units/second
  - 1 RCU = 1 strongly consistent read/second, up to 4KB in size
  - 1 WCU = 1 write/second, up to 1KB in size
  - Per Account - 80,000 RCU and 80,000 WCU
  - Don't anticipate exceeding this size limit as sizes of string phrases/second are minimal
- Lex and S3 scale automatically to support high request rates
- Lambda functions run asynchronously and scale automatically to handle many requests

# Data - Phrases to practice

- Functional sentences/words from online speech therapy related sources, as well as generally create common phrases on my own
- <http://www.home-speech-home.com/speech-therapy-sentences.htm>
- <http://www.parkinsons.org.pk/download/Speaking%20Effectively.pdf>

<p>Last <u>Thursday</u>, I saw a <u>lizard</u> by the <u>pond</u>.</p>  <p>slpmaterials.blogspot.com</p>	<p>My favorite <u>dessert</u> is strawberry <u>cheesecake</u>.</p>  <p>slpmaterials.blogspot.com</p>	<p>There are a <u>dozen</u> chocolate donuts in the <u>freezer</u>.</p>  <p>slpmaterials.blogspot.com</p>	<p>My <u>fuzzy</u> coat is in the <u>closet</u>.</p> 
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