

# AWS AI & LEX

SRI RAJAN

Principal Architect, Rackspace



FANATICAL SUPPORT® FOR AWS

# whoami

Sriram(Sri) Rajan

- Principal Architect, Rackspace
- 15+ years with Computer Systems,  
[in/rajansriram](https://in/rajansriram)
- [@sriramrajan](https://twitter.com/sriramrajan)



FANATICAL SUPPORT® FOR AWS

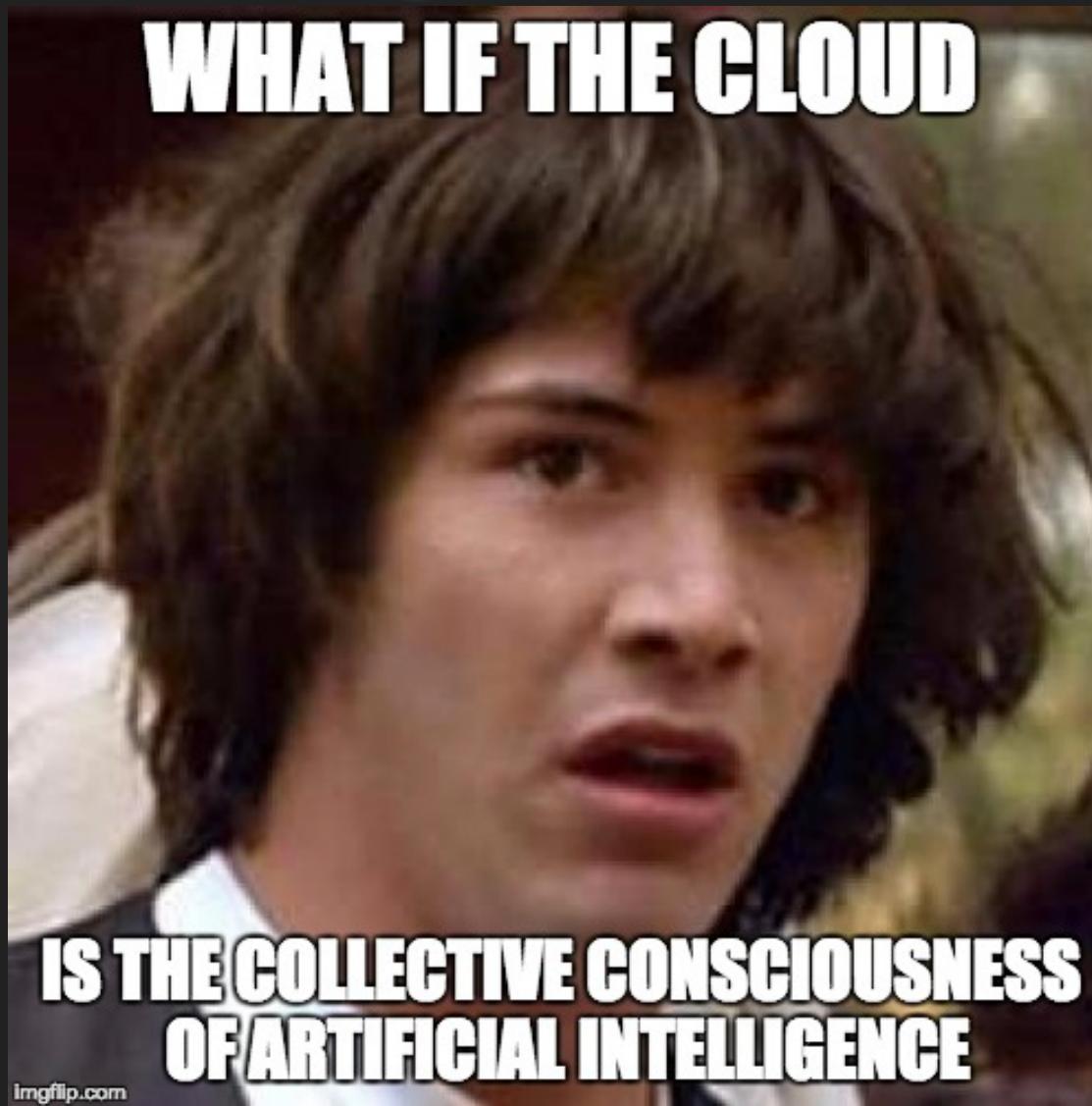
# The age of AI



FANATICAL SUPPORT® FOR AWS

# The age of Cloud

## WHAT IF THE CLOUD



FANATICAL SUPPORT® FOR AWS

# AWS & AI



AI Legos are getting better !

- Machine learning
- AI Frameworks
- Lex
- Polly
- Rekognition

# Applications

- Classification & Mining
- Recommendations & Predictions
- Anomaly detection
- Unsupervised machines
- The Terminator



FANATICAL SUPPORT® FOR AWS

# What is Lex



Lex

- Service for building conversational interfaces
  - The engine behind Echo (Alexa)
- ASR (automatic speech recognition)
- NLU (Natural Language understanding)

# What is Lex

- Declarative model – No machine learning expertise required
- Will get more intelligent over time



Lex

# Lex - Concepts

- Bot
  - Primary resource type in Lex
  - Same bot can be used for text and voice
  - Supports mobile SDK, Slack, Facebook and Twilio

# Lex - Concepts

- Intent
  - Same as goals
  - E.g. Order pizza bot has an intent to setup delivery
  - Built-in intents; AMAZON.CancelIntent
  - Cross intent sharing

# Lex - Concepts

- Utterances
  - Speech that activates an intent
  - *I would like some pizza?*

# Lex - Concepts

- Slots
  - Information needed to fulfill
  - E.g. Pizzas Size
  - Built-in; AMAZON.DURATION

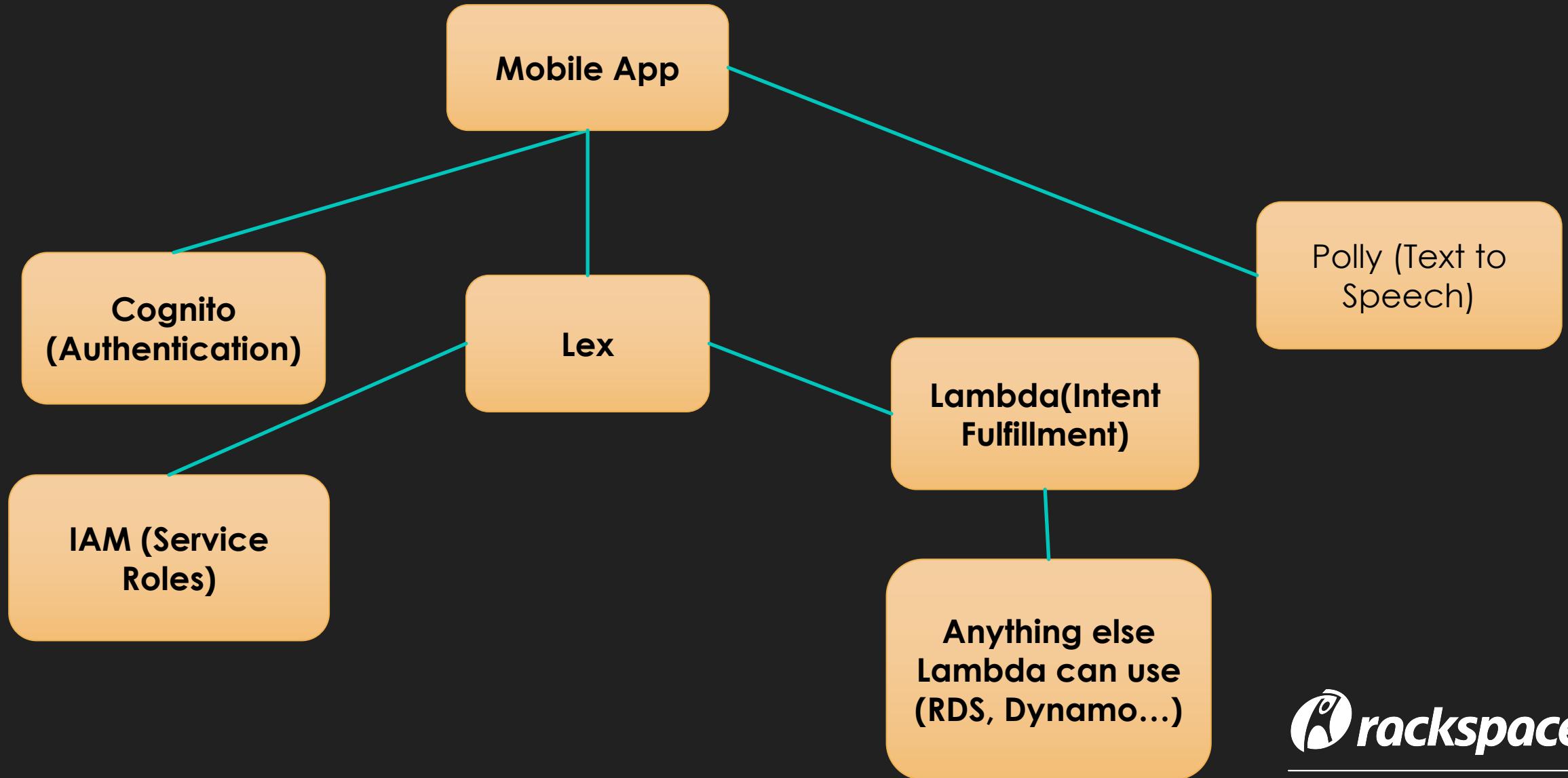
# Lex - Concepts

- Prompts
  - Questions used to fill slots
  - E.g. What toppings?
- Fulfillment
  - What to do once you have all the info
- Wake word (Alexa...)
  - Build your own

# Lex – Options and Limits

- Limit to 15 seconds of speech
- Supports US English only (for now)
- MPEG, OGG and PCM audio formats
- 7 different voices
- SDKs: Java, JavaScript, Python, CLI, .NET, Ruby on Rails, PHP, Go, and CPP.

# Stitching it together





<https://github.com/rackerlabs/lex-playground>

# Lex – API Level

Bot Name

Alias

Random string for user id

Indicates audio or text

POST /bot/OrderFlowers/alias/\$LATEST/user/4o888djjdjd/content

HTTP/1.1

x-amz-lex-session-attributes: "e30="

Content-Type: "audio/x-l16; sample-rate=16000; channel-count=1"

Accept: "audio/mpeg"

Body

Base64 session attributes

Audio format

# Lex – API Level

transcript of the  
audio

transcript of the  
audio from the  
Lex prompt

x-amz-lex-dialog-state:ElicitSlot

x-amz-lex-input-transcript:I would like to order some flowers.

x-amz-lex-intent-name:OrderFlowers

x-amz-lex-message:What type of flowers would you like to order?

x-amz-lex-session-attributes:e30=

x-amz-lex-slot-to-elicit:FlowerType

x-amz-lexslots:

eyJQaWNrdXBWaW1lIjpuudWxsLCJGbG93ZXJUeXBIIjpudWxsLCJQaWNrdXBEYXRIIjpudWxsfQ==

base64 encoded  
version of the slots

# Rackspace & Graze Hack Day

- ✓ 7 hours of hacking fun
- ✓ Using Lex to build a Q&A solution via Facebook Messenger
- ✓ Authentication system using Rekognition
- ✓ iOS app to offer snack recommendations from a photo and/or user voice



<https://youtu.be/4r8cv9-RJrg>

# Incentives

- ✓ Build a chatbot with lifelike conversations
- ✓ Prize pool of \$10,000
- ✓ Tickets to Las Vegas re:invent

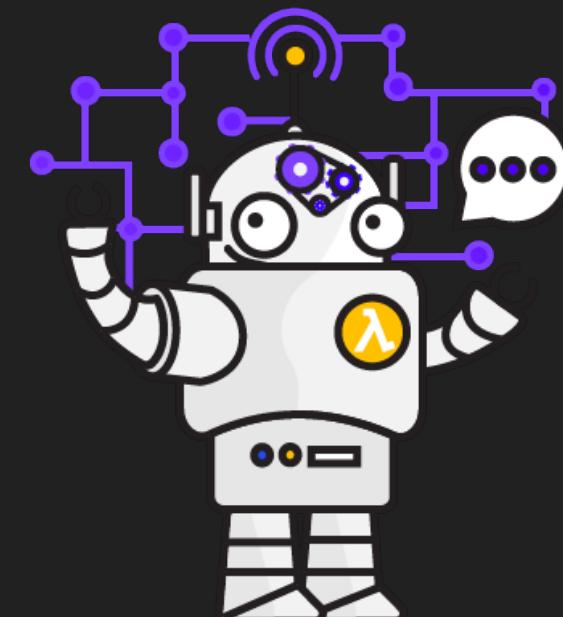


AWS  
**Chatbot Challenge**



#slack

Deadline : July 18th



 **rackspace**

FANATICAL SUPPORT® FOR AWS



Vinaka  
감사합니다  
Dank Je  
Blagodaram  
Juspaxar  
ଜୁପାଖାର  
Ua Tsaug  
Matur Muwun  
Rahmat  
Misaotra  
Maake  
Kam Sah Hammida  
Dziekuje  
Ngiyabonga  
Jauspaxar  
Dankt  
Bedankt  
Dakujem  
Děkuji  
Nirringrazzjak  
Suksama  
Matur Muwun  
Rahmat  
Misaotra  
Grazas  
Grazas  
Nirringrazzjak  
Di Ou Mesi  
Welalin  
Xвайла  
Danke  
Merci  
Salamat  
Go Raibh Maith Agat  
Kop Khun Khap  
Kia Ora  
Kop Khun Khap  
Gracias  
Arigato  
Chokrane  
Diolchi Chi  
Terima Kasih  
Matondo  
Biyani  
Tack  
Grazie  
Mochchakkeram  
Tingki  
Gracias  
Gracias  
Paddies  
Obrigado  
Gracias Tibi  
Dieuf  
Eskerrik Asko  
Najis Tuke  
Asante  
Shukria  
Dhanyavadagalu  
Manana Dankon  
Tack  
Tack



FANATICAL SUPPORT® FOR AWS

# Credits and References

<http://tech.graze.com/2017/03/06/aws-hack-day-with-rackspace/>

<https://aws.amazon.com/events/chatbot-challenge/>

[http://docs.aws.amazon.com/lex/latest/dg/API\\_Operations.html](http://docs.aws.amazon.com/lex/latest/dg/API_Operations.html)

<http://machinelearningmastery.com/start-here/>

<https://aws.amazon.com/lex/>

<https://github.com/rackerlabs/lex-playground>

<https://github.com/awslabs/aws-lex-convo-bot-example>