



# Voice Analytics - Creating a Virtual Assistant Actuary

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# Agenda

- Introduction
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- Case Study
  - Demo 1 – Voice to Voice
    - Challenges and Possible Solutions
  - Demo 2 – Voice to Display
- Potential advantages
- Considerations
- Tutorials For Implementation



What is the temperature outside?

Play Songs?

Set an alarm?



Alexa



Siri



Google Now



Cortana

Can you create a shopping List?

What is the total IBNR of our business?





# Natural Language Processing

- Type of a Machine Learning application
- Ability of a computer program to understand human language



# Voice Interfaces



- Technological giants investing heavily in voice technology
- Adaptability of voice interface increasing at an exponential rate
  - Maximum growth in consumer oriented services with scope of expansion to other segments
  - Various industries like healthcare, banking racing to be a part of this technological revolution





# Case Study – Using voice interface for Insurance Analytics

- Demonstrate two examples of adapting the voice interface which could help a P&C Actuary
- Modify the interface so that it is customized as per the user's requirements
  - *Device used for processing language is Amazon Alexa*
  - *Dummy data has been used for the demonstration*





# Demo 1 – Voice to Voice Interaction

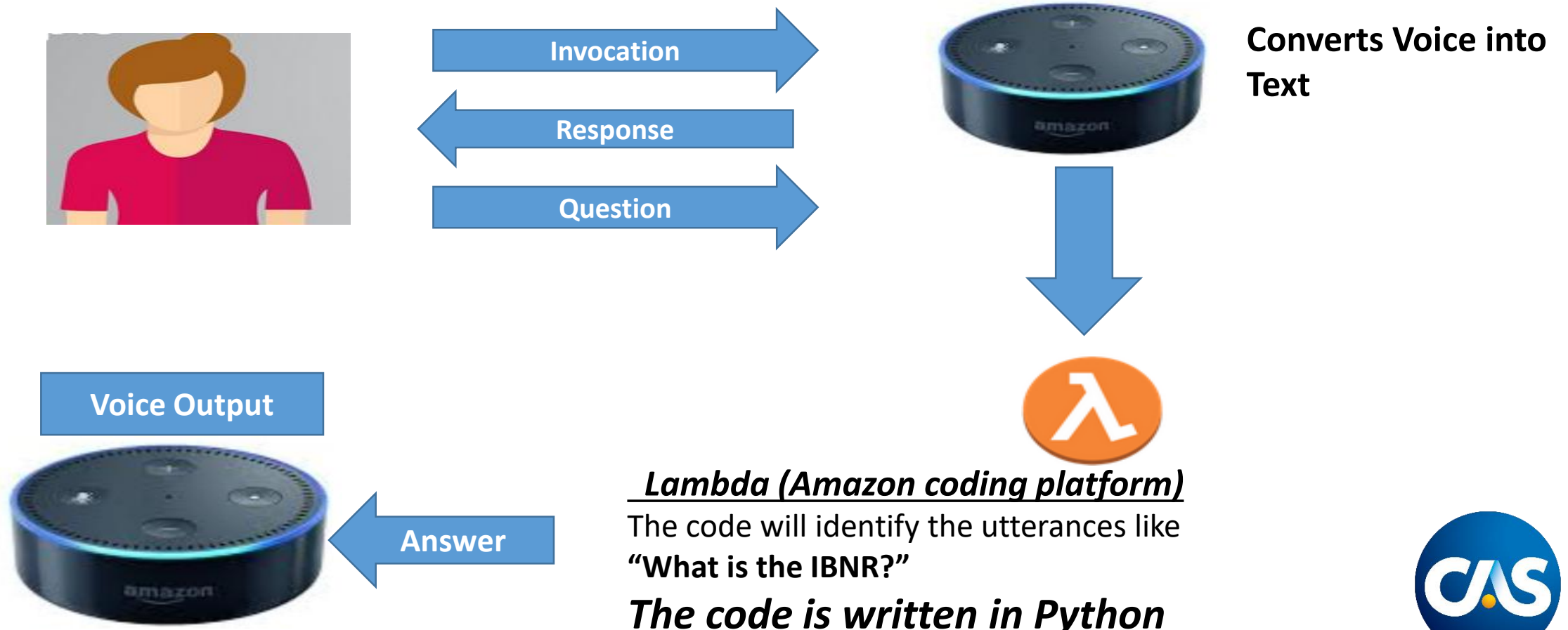
Video – <https://vimeo.com/332834625>

Password – actuary



# Demo 1 – How does it work?

Actuary ( Voice Command)







# Voice to Voice Interface

## Challenges

- Currently, responses are stored in the dictionary as written codes
  - Not practical for actual use involving millions of historical records



- Not impactful at times

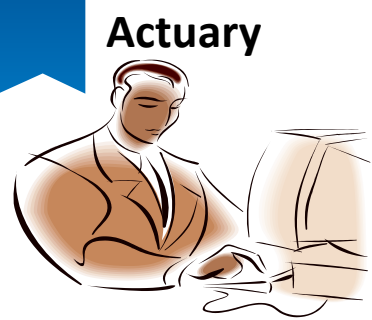


## Possible Solutions

- Use voice command to create a SQL query
  - which is then run on the database using a platform called Athena
- Instead of Voice-to-Voice interaction, use a Voice-to-Display model
  - A website is then created where the data is fetched, output is processed and displayed in the desired format



# Demo 2 – Practical Solution



Actuary

Invoke

Convert Voice to Text



Trigger



The Lambda Code triggers the response and waits for the required question. The algorithm then identifies the user's requirement and creates a SQL query.

Voice Output

Answer



The CSV file is read by a website which is accessed by the user.



The SQL query will run on the Athena platform where the dataset is saved.

Web design



The output of SQL Query will be in the CSV format in the S3 bucket. S3 bucket is just a storage facility.



ATHENA



S3 BUCKET





# Demo 2 – Voice to Display Interaction

Video – <https://vimeo.com/332834694>

Password – actuary





# Potential Advantages

- Controlling data through voice
- Facilitates management reporting
- Assistance in valuation process and other analysis
- Supports underwriters and claims management to assess information on a real time basis



# Considerations

- This is the first iteration of creating a Voice based analytics model on P&C insurance data.
- The development of such platforms will be dependent on the format and quality of data.
- Currently the demo works at a micro level but needs additional research to extend it to enterprise level which would require additional investment in building infrastructure to support the development.
- Actuaries need to be open towards learning and adapting various machine learning concepts which will equip them to work with various new technologies and learn various open source languages like Python.



# Tutorials For Implementation

- Step by Step tutorial to build a Voice platform
  - using voice command to extract the data based on the SQL query.

<https://github.com/aws-labs/voice-powered-analytics>

- The project is set up by AWS lab.
- The above technique in this tutorial can be associated to any organization data repository.



# Tutorials For Implementation

- The tutorials are very extensive and provide additional information.
- There are two modules which are important for building voice analytics.
  - Athena Lab : <https://github.com/aws-labs/voice-powered-analytics/blob/master/README-Athena.md>
  - Amazon Alexa : <https://github.com/aws-labs/voice-powered-analytics/blob/master/README-Alexav2.md>





Questions?

Thank You.





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