

NATURAL LANGUAGE PROCESSING

AI based QA System

Chat bot Implementation: Low Code Model

Qualitative Analysis: QA AI Models

Scope

Chat bot Implementation

Low Code Model with Microsoft Azure

1. Azure Cloud
2. Azure Bot Service
3. Azure Language Studio
4. Azure Search Service
5. Azure Speech Service
6. Azure Translator Service

Qualitative Analysis

QA AI Models

1. BERT
2. RoBERTa
3. ELECTRA
4. DistilBERT

Repository

https://github.com/BenoyRNair/NLP_AI_QA

Chat bot Implementation

Low code model with Microsoft Azure

Azure Portal

The screenshot displays the Microsoft Azure Portal interface. At the top, the navigation bar includes the Microsoft Azure logo, a search bar, and user account information. The left sidebar contains a navigation menu with categories like Overview, Activity log, Access control (IAM), Tags, Resource visualizer, Events, Settings, Cost Management, and Monitoring. The main content area shows the 'Essentials' section for a specific resource group, including subscription details and a list of resources. A table titled 'Resources' lists various Azure services, with a callout 'Azure Services' pointing to the table header. Another callout 'Chat Bot' points to the 'Web App Bot' entry in the table. The table includes columns for Name, Type, and Location. The bottom of the page shows pagination controls and a 'Give feedback' link.

Home >

Resource group

Search (Ctrl+ /)

Create Manage view Delete resource group Refresh Export to CSV Open query Assign tags Move Delete

JSON View

Essentials

Subscription (move): Deployments: 8 Succeeded

Subscription ID: Location: Australia East

Tags (edit): Click here to add tags

Resources Recommendations

Filter for any field... Type == all Location == all Add filter

Showing 1 to 7 of 7 records. Show hidden types

No grouping List view

Name	Type	Location
Log Analytics workspace	Log Analytics workspace	Australia East
Language	Language	Australia East
Search service	Search service	Australia East
Speech service	Speech service	Australia East
Web App Bot	Web App Bot	Global
App Service plan	App Service plan	Australia East

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Give feedback

Chat bot Implementation

Low code model with Microsoft Azure

Chat bot Simulation:
Windows Voice Assistant

Windows Voice Assistant Client v1.17.0

Connection Profile: Test-WC-HelpAndAdvice-Bot-01

Conversation View

Do I need a permit for a new restaurant?

Do I need a permit for a new restaurant?

how a grease arrestor works?

how a grease arrestor works?

Bot Greeting

Hello and Welcome

Bot Response (Text & Audio)

Retail food outlets such as restaurants, cafes and lunch bars produce greasy wastewater from food preparation and cleaning activities.

The grease and fat contained in wastewater can accumulate both in your drains and our wastewater system, resulting in odorous and toxic gases, corrosion, blockages and wastewater overflows. Blockages and overflows impact the community and our ability to provide customers effective wastewater services.

Under the "Water Services Act 2012", all businesses involved in the retail food industry must obtain written permission in the form of a [trade waste permit](https://www.watercorporation.com.au/Help-and-advice/Trade-waste/Apply/Apply-to-discharge-trade-waste "Apply to discharge trade waste") before discharging any waste into our wastewater system.

During the trade waste application assessment process our trade waste officers assess if a grease arrestor is required based on the type of activities being undertaken. In general, retail food businesses that prepare and cook on site require a grease arrestor.

Did you want to know more?

(1) How a grease arrestor works

Bot Response (Text & Audio)

Grease arrestors reduce the amount of greasy waste flowing into the wastewater system, by allowing fats, oil and grease to rise to the top and solids to sink to the bottom

* Your grease arrestor size must meet current Water Corporation [sizing requirements](https://www.watercorporation.com.au/Help-and-advice/Trade-waste/Retail-food-businesses/Grease-arrestor-maintenance/Grease-arrestor-sizing "Grease arrestor sizing")

* They need to be [pumped out](https://www.watercorporation.com.au/Help-and-advice/Trade-waste/Retail-food-businesses/Grease-arrestor-maintenance "Grease arrestor maintenance and cleaning") according to the frequency shown on your trade waste permit by a licensed liquid waste contractor

Did you want to know more?

(1) Who needs a grease arrestor?

(2) Pump out frequency & your responsibility

(3) Managing greasy waste

(4) Shared grease arrestors

(5) What if I don't install or upgrade a grease arrestor?

(6) FOGMan program & liquid waste contractors

Message Payload

Activity Log

Export Log

00:11:03.369 Type: message

00:11:49.450 Type: message

00:11:59.998 Type: message

00:12:01.903 Type: message

Activity Payload

```
{
  type: "message",
  id: "9bae8654-d855-4ed5-9521-7b41dbcca68b",
  timestamp: 6/10/2022 4:12:00 PM,
  serviceUrl: "urn:botframework:websocket:directlinespeech",
  channelId: "directlinespeech",
  from: {
    id: "WaterCorp-HelpAndAdvice-Bot-01",
    name: "WaterCorp-HelpAndAdvice-Bot-01",
    conversation: {
      isGroup: false,
      id: "d6f87b54-900e-4f66-b472-fa42a73dabea"
    },
    recipient: {
      id: "d6f87b54-900e-4f66-b472-fa42a73dabea|0000",
      locale: "en-us",
      text: "Grease arrestors reduce the amount of greasy waste flowing into the wastewater system, by allowing fats, oil and grease to rise to the top and solids to sink to the bottom"
    }
  },
  * Your grease arrestor size must meet current Water Corporation [sizing requirements](https://www.watercorporation.com.au/Help-and-advice/Trade-waste/Retail-food-businesses/Grease-arrestor-maintenance/Grease-arrestor-sizing "Grease arrestor sizing")
}
```

Voice Input

Stopped listening

Custom Activity:

New... Edit... Send

Qualitative Analysis

QA AI Models: BERT, RoBERTa, ELECTRA & DistilBERT

Repository : https://github.com/BenoyRNair/NLP_AI_QA

Scoring: https://github.com/BenoyRNair/NLP_AI_QA/blob/main/Assessment/GoT_QnA_Scoring.xlsx

No.	Question	Correct Answer	BERT		RoBERTa		ELECTRA		DistilBERT	
			Response	Confidence	Response	Confidence	Response	Confidence	Response	Confidence
1	Who is the father of Arya Stark?	Eddard Stark	Robert Baratheon	99.5%	Eddard	99.2%	Eddard	100.0%	Maisie Williams	99.9%
2	Which chemical was used during the Battle of the Blackwater to destroy Stannis Baratheon's fleet?	Wildfire	wildfire	99.8%	wildfire	95.0%	wildfire	100.0%	wildfire	100.0%
3	In which Westeros constituency can we find The Dreadfort?	The North	Vaes Dothrak	68.9%	Joy	19.4%	King's Landing	100.0%	Meereen	99.5%
4	Who is Myrcella betrothed to in season 2?	Trystane Martell	Trystane Martell	98.5%	Trystane Martell	80.1%	Trystane Martell	100.0%	Trystane Martell	99.2%
5	Who is Jon's direwolf?	Ghost	Ghost	99.9%	Ghost	98.2%	Ghost	100.0%	Ghost	99.5%
6	Which name is given to the bastards of The Reach?	Flowers	Rivers	24.2%	Flowers	79.5%	Flowers	100.0%	Flowers	98.7%
7	Which is the main color of House Tarly's sigil?	Green	Heartsbane	82.5%	fish	73.8%	fish	100.0%	Heartsbane	99.8%
8	The Water Gardens belong to which constituency of Westeros?	Dorne	high lords	64.7%	Dorne	95.1%	Dorne	100.0%	Croatia	98.2%
9	What nasty creature felled a drunken King Robert?	Boar	boar	39.6%	boar	62.0%	boar attack	89.7%	boar	94.2%
10	What is the name of Arya Stark's sword?	Needle	Needle	99.9%	Needle	97.8%	Needle	100.0%	Ice	99.8%
11	What is the motto of House Tyrell?	Growing Strong	A peaceful land, a quiet people	81.3%	bannerman	90.4%	Ours is the Fury	99.6%	foremost	91.3%
12	What is the nickname given to Brynden Tully?	Blackfish	Blackfish	97.5%	Blackfish	98.2%	Blackfish	100.0%	Clive Russell	99.9%
13	Where can we find the Moon Door?	The Eyrie	a trap door	61.8%	mountains below	52.2%	the high hall	100.0%	Belfast	88.3%
14	Where was Catelyn Stark when she died?	The Twins	in Winterfell's crypt	57.7%	Battle of Winterfell	57.4%	in a bed of blood	49.7%	Riverrun	99.4%
15	Who was Shagga's father?	Dolf	Ned Stark	92.9%	Randyll Tarly	97.2%	Balon Greyjoy	100.0%	Ned Stark	99.8%
16	Which name is given to the inhabitants of The Neck?	Crannogmen	Seaworth	49.6%	Snow	54.9%	crannogmen	96.5%	Laura Elphinstone	99.4%
17	Who did Jon execute after his first general meeting as Lord Commander with the men of the Night's Watch?	Janos Slynt	Janos Slynt	99.4%	Janos Slynt	93.4%	Slynt	100.0%	Jeor Mormont	99.8%
18	Which house has a sigil of a silver trout?	House Tully	House Stark	17.0%	House Tully	31.7%	House Tully	1.5%	King's Landing	98.8%
19	What is the name of the ancestral Valyrian steel sword belonging to House Tarly?	Heartsbane	Heartsbane	99.9%	Heartsbane	99.3%	Heartsbane	100.0%	Heartsbane	100.0%
20	Who was Hand of the King before Eddard Stark?	Jon Arryn	Jon Arryn	97.1%	Lord Eddard "Ned" Stark	81.0%	Jon Arryn	100.0%	Robert Baratheon	99.6%
Assessment Outcome Ranking: (I) ELECTRA (II) RoBERTa (III) BERT (IV) DistilBERT		Correct	9		12		14		6	
		Incorrect	11		8		6		14	
		Rank	III		II		I		IV	
		Weighted Score	-1.7664		14.1084		24.3822		-22.8198	