

LANGUAGE UNDERSTANDING IN NATURAL LANGUAGE PROCESSING USING MICRO SOFT AZURE

Bridging the Gap between Humans and Machines

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INTRODUCTION TO NATURAL LANGUAGE PROCESSING

- NLP stands for Natural Language Processing.
- It's a subfield of artificial intelligence (AI) that focuses on the interaction between computers and human language.
- Language is one of the primary ways humans communicate.
- It's rich in context, ambiguity, and nuance, making it challenging for machines to understand.
- NLP aims to bridge the gap between human language and computers.
- Its primary objectives include understanding, interpreting, and generating human language.
- NLP is pervasive in our daily lives.
- Examples of applications include virtual assistants (e.g., Siri, Alexa), search engines (e.g., Google), and chatbots.



ABOUT SOFTWARE TOOL

- In this language understanding we used Microsoft Azure tool.
- Microsoft Azure is a cloud computing platform and service created by Microsoft. It provides a wide range of cloud-based services, including infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS) offerings.
- Azure is designed to help organizations build, deploy, and manage applications and services through Microsoft-managed data centers worldwide



USAGE OF TOOLS

- Set up Azure Services – creating an Azure account
- Choose the Right Azure Service – We choose Azure QnA Maker
- Collect and Prepare Data – we choosen real time Sample Data
- Train the Model
- Integration with Chatbot
- Test and Iterate
- Deploy and Monitor



REPORTED LITERATURE

- A literature survey on Language Understanding :Vision, status, and research topics of Natural Language Processing by Xieling Chen a, Haoran Xie b, Xiaohui Tao c
- The Power of Natural Language Processing by Ross Gruetzmacher
- Advances in natural language processing JULIA HIRSCHBERG AND CHRISTOPHER D. MANNING



OBJECTIVE OF PROJECT

- The objectives of language understanding in Natural Language Processing (NLP) are to enable computers and artificial intelligence systems to comprehend, interpret, and process human language in a meaningful and contextually relevant way.
- In addition to understanding language, NLP also focuses on generating human-like text, whether it's in the form of chatbot responses, content generation, or machine-generated reports.



TIMELINE OF WORK PROPOSAL

- Week 1: Planning and Research & Data Collection and Preparation
- Week 2: Model Training
- Week 3: Integration and Development
- Week 4: Testing and Iteration
- Week 5: Deployment and Optimization



USED ALGORITHM

- Azure QnA Maker
 - Maker uses a combination of natural language processing techniques, including machine learning algorithms for language understanding and information retrieval.
 - It employs techniques such as word embeddings, semantic similarity, and ranking algorithms to match user questions to the most relevant answers in the knowledge base.



WORK DONE IN STEP BY STEP DESCRIPTION

➤ STEP 1:

The screenshot shows the Microsoft Azure Language Studio web application. The browser address bar displays `language.cognitive.azure.com/home`. The page has a blue header with "Cognitive Services" and "Language Studio" tabs. The main content area is titled "Welcome to Language Studio" and includes a section for "Recent custom projects you've worked on", which currently shows a message: "You don't have any recent projects yet. Start with one of the custom capabilities to create a new project. The list of recent projects you've worked on will then appear here." Below this is a "Create new" dropdown menu with a list of options: "Conversational language understanding" (Build natural language into apps, bots, and IoT devices), "Orchestration workflow" (Connect and orchestrate CLU, Custom question answering & LUIS project...), "Custom question answering" (Customize the list of questions and answers extracted from your content...), "Custom text classification" (Train a classification model to classify text using your own data...), and "Custom named entity recognition" (Train an extraction model to identify your domain categories using your o...). A tooltip is visible over the "Custom question answering" option, stating: "Customize the list of questions and answers extracted from your content corpus to provide a conversational experience that suits your needs." Below the dropdown are several featured capabilities: "Post call transcription and analytics" (Batch transcribe call center recordings and extract valuable information such as Personal Identifiable Information (PII), sentiment, and call summary), "Summarize information" (Summarize the most important or relevant information within documental and conversational text), and "Document translation" (Batch translate documents into one or more languages either from local storage or Azure Blob Storage). At the bottom, there is a "Learning resources" section with links to "Read the documentation", "Explore our code samples", "Watch a video (coming soon)", and "Microsoft Learn (coming soon)". The Windows taskbar at the bottom shows the time as 11:06 on 04-05-2023.



➤ STEP 2: Create a project

The screenshot shows the Azure Language Studio interface with a 'Create a project' dialog box open. The dialog box has a sidebar with three steps: 'Choose language setting' (selected), 'Enter basic information' (current step), and 'Review and finish'. The 'Enter basic information' section contains the following fields:

- Azure search resource:** A dropdown menu showing 'atcslanguage-asfcmvvcyhnk4c'. Above it, a text field contains 'atcslanguage'.
- Name ***: A text field containing 'digitalquestions'.
- Description**: A text field containing 'Type project description'.
- Source language ***: A dropdown menu showing 'English'.
- Default answer when no answer is returned ***: A text field containing 'No answer found. Contact the administrator'.

At the bottom of the dialog box are three buttons: 'Back', 'Next', and 'Create project' (disabled), along with a 'Cancel' button.

The background interface shows the 'Language Studio' header, a breadcrumb 'Custom question answering', and a 'Select the project you want to work with' section with options like 'Create new project', 'Export', 'Import', and 'Delete'. A search bar for projects is visible on the right.

➤ STEP 3:Deployment

The screenshot displays the Microsoft Azure portal interface. The browser's address bar shows the URL: `portal.azure.com/#view/HubsExtension/DeploymentDetailsBlade/~/overview/id/%2Fsubscriptions%2Fa231df6b-78a5-4329-b255-c01e3762f224...`. The page title is "Microsoft.Template-20240225225854 | Overview". The left sidebar contains a search bar and a navigation menu with "Overview", "Inputs", "Outputs", and "Template". The main content area features a green checkmark icon and the text "Your deployment is complete". Below this, deployment details are listed: "Deployment name : Microsoft.Template-20240225...", "Subscription : Azure for Students", and "Resource group : atcsindia". The "Start time" is "25/02/2024, 22:59:04" and the "Correlation ID" is "e60f3bb3-f761-4b10-870f-14...". A "Go to resource group" button is present. On the right, there are three promotional cards: "Cost management" (Get notified to stay within your budget), "Microsoft Defender for Cloud" (Secure your apps and infrastructure), and "Free Microsoft tutorials" (Start learning today). The Windows taskbar at the bottom shows the date as 25-02-2024 and the time as 11:03 PM.

Microsoft Azure

Home > Microsoft.Template-20240225225854 | Overview

Deployment

Search

Overview

Inputs

Outputs

Template

Delete Cancel Redeploy Download Refresh

✓ Your deployment is complete

Deployment name : Microsoft.Template-20240225... Start time : 25/02/2024, 22:59:04

Subscription : Azure for Students Correlation ID : e60f3bb3-f761-4b10-870f-14...

Resource group : atcsindia

> Deployment details

< Next steps

Go to resource group

Give feedback

Tell us about your experience with deployment

Cost management

Get notified to stay within your budget and prevent unexpected charges on your bill.

Set up cost alerts >

Microsoft Defender for Cloud

Secure your apps and infrastructure

Go to Microsoft Defender for Cloud >

Free Microsoft tutorials

Start learning today >

Tomorrow's high Near record

Search

ENG IN

11:03 PM 25-02-2024

➤STEP 4:Channel

The screenshot displays the Microsoft Azure portal interface. The browser's address bar shows the URL: `portal.azure.com/#@99220040579kluac.onmicrosoft.com/resource/subscriptions/a231df6b-78a5-4329-b255-c01e3762f224/resourceGroups/atc...`. The page title is "atcslangugae-bot | Channels". A left-hand navigation pane lists various settings including Overview, Activity log, Access control (IAM), Tags, Bot profile, Configuration, Channels (selected), Pricing, Test in Web Chat, Encryption, Networking, and Properties. The main content area shows a notification about the updated channels page, followed by a statement: "This bot is connected with the following channels." Below this is a table with columns for Channel, Health status, Details, and Actions. The table lists two channels: Direct Line (Healthy) and Web Chat (Healthy). Under the "Available Channels" section, there is a link to "Learn more" and a list of available channels, including Alexa. The Windows taskbar at the bottom shows the system clock as 11:06 PM on 25-02-2024, along with weather information (27°C Haze) and various application icons.

Channel	Health status	Details	Actions
Direct Line	Healthy	REST API for communicating directly with a bot	
Web Chat	Healthy	Embeddable Web Chat control	

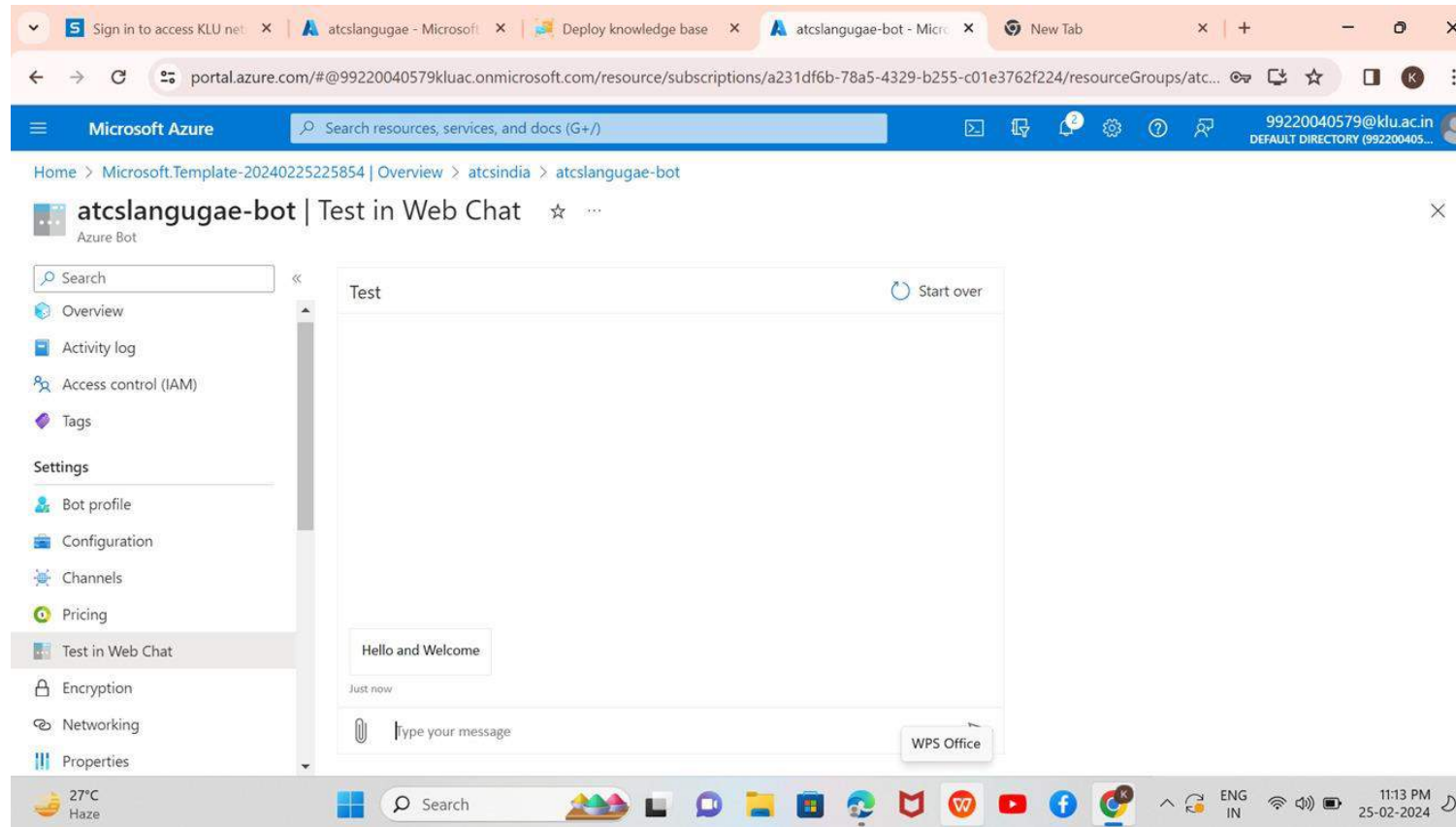
Available Channels

Connect the bot with channels. [Learn more](#)

Channel	Details
Alexa	Alexa Ch



RESULT AND DISCUSSION



Sign in to access KLU net

atcslangugae - Microsoft

Deploy knowledge base

atcslangugae-bot - Micro

New Tab

portal.azure.com/#@99220040579kluac.onmicrosoft.com/resource/subscriptions/a231df6b-78a5-4329-b255-c01e3762f224/resourceGroups/atc...

Microsoft Azure

Search resources, services, and docs (G+)

99220040579@klu.ac.in
DEFAULT DIRECTORY (992200405...

Home > Microsoft.Template-20240225225854 | Overview > atcsindia > atcslangugae-bot

atcslangugae-bot | Test in Web Chat

Search

Overview

Activity log

Access control (IAM)

Tags

Settings

Bot profile

Configuration

Channels

Pricing

Test in Web Chat

Encryption

Networking

Properties

Test

Start over

How many long was Lincoln's formal education?

How many long was Lincoln's formal education?

None of the above.

Just now

How many long was Lincoln's formal education?

Just now

18 months

Just now

Type your message

27°C
Haze

Search

ENG
IN

11:15 PM
25-02-2024



SUMMARY

- The project aims to develop a question-answering chatbot leveraging Azure's AI services for natural language processing (NLP).
- The chatbot will be capable of understanding user queries and providing accurate responses by extracting relevant information from a knowledge base or database.



REFERENCES

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