

# Language understanding in natural language processing using microsoft azure

---

Bridging the Gap between Humans and Machines

Submitted by 99220040760

U.kavya

# Table of contents

---

- ✓ Introduction
- ✓ About Software Tools
- ✓ Usage of Tools
- ✓ Reported Literature
- ✓ Objective Of Project
- ✓ Timeline of work proposal
- ✓ Used Algorithm
- ✓ Work done in step by step description
- ✓ Result and Discussion
- ✓ Summary
- ✓ References



# 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 Tools

---

- ✓ 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 choose 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 Gruetzemacher
- ✓ 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.

# Time line 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

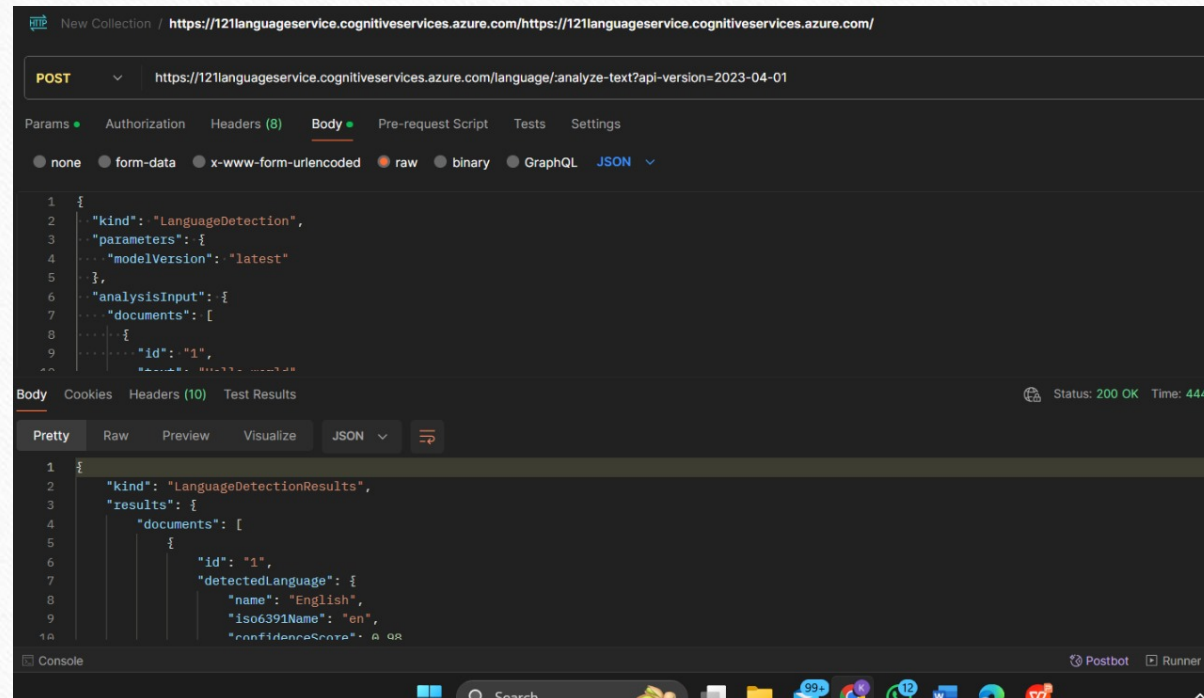


# Used Algorithm

---

- ✓ Azure QnA MakerQnA
- ✓ 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 down in step by step description



The screenshot displays a REST client interface with a new collection named 'https://121languageservice.cognitiveservices.azure.com/https://121languageservice.cognitiveservices.azure.com/'. The selected method is POST, and the URL is 'https://121languageservice.cognitiveservices.azure.com/language/analyze-text?api-version=2023-04-01'. The 'Body' tab is active, showing a JSON request body. The response status is 200 OK, and the response body is also shown in JSON format.

```
1 {
2   "kind": "LanguageDetection",
3   "parameters": {
4     "modelVersion": "latest"
5   },
6   "analysisInput": {
7     "documents": [
8       {
9         "id": "1",
10        "text": "The quick brown fox jumps over the lazy dog."
11      }
12     ]
13   }
14 }
```

```
1 {
2   "kind": "LanguageDetectionResults",
3   "results": {
4     "documents": [
5       {
6         "id": "1",
7         "detectedLanguage": {
8           "name": "English",
9           "iso6391Name": "en",
10          "confidenceScore": 0.98
11        }
12      }
13     ]
14   }
15 }
```



# Result and discussion

The screenshot displays the Azure Cognitive Services portal interface. On the left, a sidebar menu lists various services, with 'Analyze Text' selected under the 'Cognitive Services - LUIS' category. The main panel shows the 'Job Status' for a specific job, with a 'Sample Response' section at the bottom. This section displays an HTTP POST request to the language analyze-text endpoint, using the 2023-04-01 API version. The request body contains three documents for language detection: 'Hello world' (English), 'Bonjour tout le monde' (French), and 'Hola mundo' (Spanish). The response status code is 200.

Version: 2023-04-01

Filter by title

Overview

- Analyze Text
- Cancel Job
- Job Status
- Submit Job

> Cognitive Services - LUIS

> Cognitive Services - Personalizer

> Cognitive Services - QnA Maker

> Cognitive Services - Custom Voice

> Communication

> Compute

> Confluent

> Consumption

> Container Instances

> Container Registry

> Cosmos DB

> Cosmos DB for PostgreSQL

> Cosmos DB Resource Provider

> Cost Management

> Custom Providers

HTTP

POST {Endpoint}/language:analyze-text?api-version=2023-04-01

```
{
  "kind": "LanguageDetection",
  "parameters": {
    "modelVersion": "latest"
  },
  "analysisinput": {
    "documents": [
      {
        "id": "1",
        "text": "Hello world"
      },
      {
        "id": "2",
        "text": "Bonjour tout le monde"
      },
      {
        "id": "3",
        "text": "Hola mundo"
      }
    ]
  }
}
```

Sample Response

Status code: 200

POST <https://121languageservice.cognitiveservices.azure.com/language/analyze-text?api-version=2023-04-01> Send

Parameters Authorization Headers (8) Body Pre-request Script Tests Settings

none form-data x-www-form-urlencoded raw binary GraphQL JSON

```
1 {
2   "kind": "LanguageDetection",
3   "parameters": {
4     "modelVersion": "latest"
5   },
6   "analysisInput": {
7     "documents": [
8       {
9         "id": "1",
10        "text": "The quick brown fox jumps over the lazy dog."
11      }
12     ]
13   }
14 }
```

Body Cookies Headers (10) Test Results Status: 200 OK Time: 444 ms Size: 1012 B Save as example

Pretty Raw Preview Visualize JSON

```
1 {
2   "kind": "LanguageDetectionResults",
3   "results": {
4     "documents": [
5       {
6         "id": "1",
7         "detectedLanguage": {
8           "name": "English",
9           "iso6391Name": "en",
10          "confidenceScore": 0.98
11        }
12      }
13     ]
14   }
15 }
```

Console Postbot Runner Auto-select agent Cookies Trash



# Summary

---

- ✓ The project aims to develop a question-answering **Sentiment Analysis, Language Detection, NameEntity Recognition**.
- ✓ 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

---

- ✓ A. Kalyanpur, S. Patwardhan, B. K. Boguraev, A. Lally, J. Chu-Carroll, 2012. Fact-based question decomposition in DeepQA. IBM J. RES. & DEV. VOL. 56 NO. 3/4, pp. 1-11.
- ✓ A. Lally, J. M. Prager, M. C. McCord, B. K. Boguraev, S. Patwardhan, J. Fan, P. Fodor, J. Chu-Carroll., 2012. Question analysis: How Watson Reads a clue. IBM J. RES. & DEV. VOL. 56 NO. 3/4, pp. 1-14.
- ✓ B. L. Lewis, 2012. In the game: The interface between Watson and Jeopardy!. IBM J. RES. & DEV. VOL. 56 NO. 3/4, pp. 1-6.
- ✓ Benjamin S. Bloom, 1984. Taxonomy of educational objectives. s.l., s.n. C. Wang, A. Kalyanpur, J. Fan, B. K. Boguraev, D. C. Gondek., 2012. Relation extraction and scoring in DeepQA. IBM J. RES. & DEV. VOL. 56 NO. 3/4, pp. 1-12.