AI in Parenting: The GPT-Powered Parenting Assistant

#ParentingAssistant #GPT #AIPoweredParenting #AIinChildcare #SmartParenting #ParentingTechnology #ChildcareInnovation #ParentingSupport #AIinParenting #NextGenParenting #OpenAIParenting #ParentingRevolution #DigitalParenting #AIForBetterParenting #ParentingMadeEasier #Multiligualassistant

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Problem Description:

Parenting, particularly for first-time parents, can be a daunting task. Parents often find themselves overwhelmed by the myriad of responsibilities and decisions that they have to make on behalf of their newborn. The task becomes even more complex when parents have to figure out the reasons behind their child's behavior, like frequent crying, or tracking their child's growth and development. Adding to the challenge, some parents might not be fluent in English, the dominant language in most parenting resources. This brings us to the need for a **multilingual parenting assistant** that can provide **on-demand**, **accurate** and **helpful information**, **especially during off-hours**.

Inspiration:

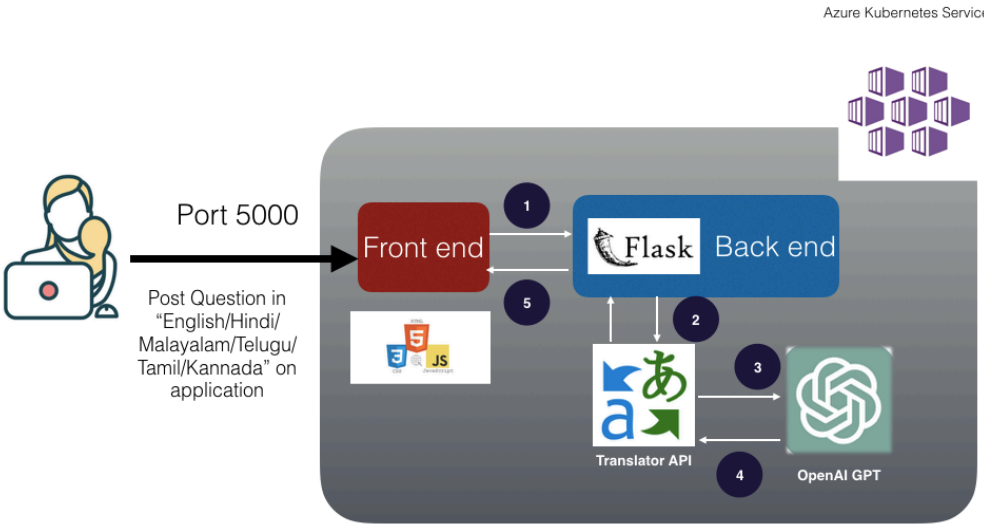
The primary inspiration for this project was the mothers of newborns who require immediate assistance during off-hours. They are often left clueless when their baby starts crying at odd hours or when they need to track the child's progress but don't have the means to do so efficiently. This app, in regional languages, can provide them with the assistance they need.

Solution:

Our solution is a multilingual 'Parenting Assistant' web app powered by GPT and Translator API. This app will be designed to understand questions about parenting in any regional language and provide responses in the same language. These responses will be curated by leveraging the power of AI - particularly OpenAI's GPT model - which is known for generating human-like text based on the input provided.

Architecture:

Parenting Assistant

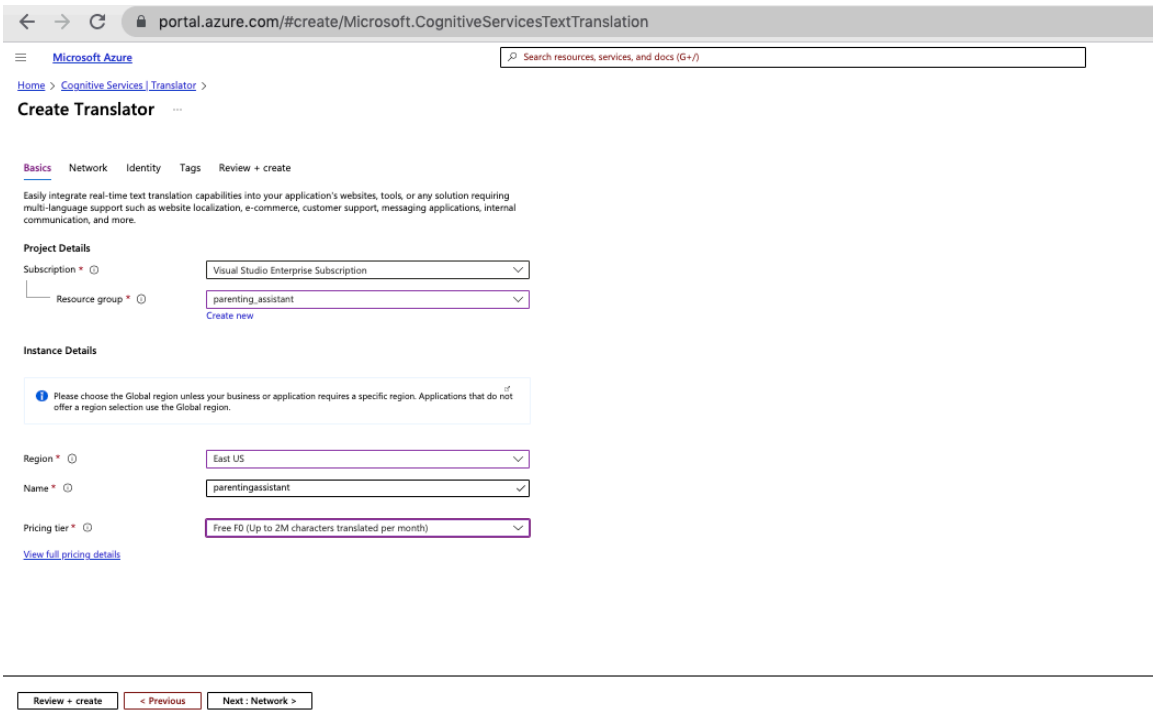


1	Question from UI passed to Flask Python backend
2	Question in regional language to be sent to Azure Translator API for conversion to English
3	English translated prompt to be sent to Open AI GPT API
4	Response from Open AI GPT in English shared to Translator API for regional language conversion
5	Regional language response passed back to Front end

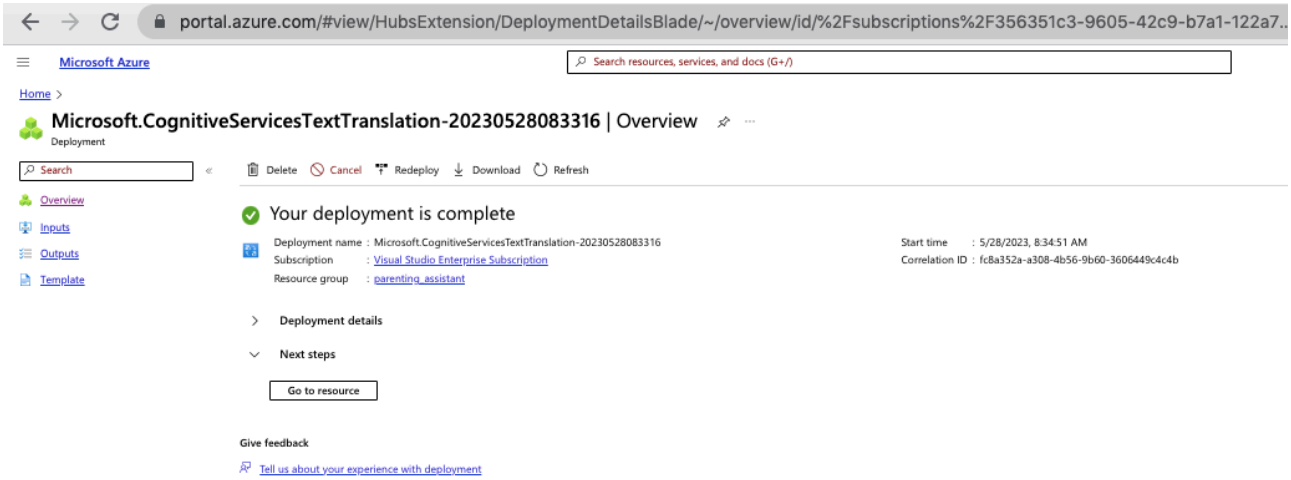
Pre-requisites:

1. We'll set up Translator API for the language conversion. Here, we will be using the Microsoft Azure Translator Text API.

To use the Microsoft Azure Translator Text API, you'll need to set up an Azure account, create a new resource for the Translator Text API, and grab the API key. Create Translator API in Azure as shown below:



Capture the Keys, region, endpoint of the Translator API



2. Ensure that you have your OpenAI API key at hand, which is necessary for making API requests. Generate OpenAI - API key from OpenAI website.

Implementation Detail:

As part of this implementation, first, lets setup in Azure VM (Linux - Ubuntu). Post this, we can containerise and deploy to AKS

Step 1: Azure VM setup:

1. Create Resource Group
2. Create a Azure VM (Linux Ubuntu VM)
3. Open port 5000 in network to allow traffic
4. Install Python libraries by executing the below commands in sequence:

```
sudo apt update
sudo apt install python3-pip
pip3 install Flask openai
```

Step 2: Setting Up the Backend
We will start with setting up the Flask backend, Python being the server-side language. We'll create a POST API endpoint '/ask' to accept the user's parenting question in regional language, translate it to English, feed it to GPT, and then translate the response back to the original language.

Create a new file named '**app.py**' with below code snippet:

```
import os
import openai
import requests
import uuid
import json
from flask import Flask, render_template, request, jsonify, send_file

app = Flask(__name__)
openai.api_key = "provide openai api key"

# Set up Azure translator
subscription_key = 'provide translator key'
endpoint = 'https://api.cognitive.microsofttranslator.com/'
location = 'provide region'

def translate(input_text, target_language):
    path = '/translate'
    constructed_url = endpoint + path

    params = {
        'api-version': '3.0',
        'from': 'en',
        'to': [target_language]
    }

    headers = {
        'Ocp-Apim-Subscription-Key': subscription_key,
        'Ocp-Apim-Subscription-Region': location,
        'Content-type': 'application/json',
        'X-ClientTraceId': str(uuid.uuid4())
    }

    body = [{'text': input_text}]

    request = requests.post(constructed_url, params=params, headers=headers, json=body)
    response = request.json()
    return response[0]['translations'][0]['text']

@app.route('/')
def index():
    return render_template('index.html')

@app.route('/ask', methods=['POST'])
def ask():
    data = request.get_json()  # Use get_json() since we're sending JSON
    question = data['question']
    language = data['language']
```

```
    # Translate question to English
    question_in_english = translate(question, 'en')

    response = openai.Completion.create(
        engine="text-davinci-002",
        prompt=f"Parenting question: {question_in_english}\nAnswer:",
        max_tokens=150,
        n=1,
        stop=None,
        temperature=0.5,
    )

    answer = response.choices[0].text.strip()

    # Translate answer to the chosen language
    answer_in_chosen_language = translate(answer, language)

    return jsonify({'answer': answer_in_chosen_language})

if __name__ == '__main__':
    app.run(debug=True, host="0.0.0.0")
```

Step 3: Setting Up the Frontend

We will create a basic HTML page (**index.html**) under a folder "**templates**" with a form to input the user's question and a space to display the assistant's response. CSS will be used for styling, and JavaScript to make the API call.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Parenting Assistant - powered by GPT</title>
    <link href="https://fonts.googleapis.com/css2?family=Roboto:wght@400;700&display=swap"
rel="stylesheet">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
    <style>
        body {
            font-family: 'Roboto', sans-serif;
            background-color: #f06292;
            color: white;
            display: flex;
            align-items: center;
            justify-content: center;
            height: 100vh;
            margin: 0;
```

```
            padding: 0;
        }
        #container {
            text-align: center;
            padding: 20px;
            background: rgba(0,0,0,0.7);
            border-radius: 10px;
        }
        h1 {
            margin-bottom: 20px;
        }
        #chatbox {
            height: 300px;
            width: 100%;
            overflow-y: scroll;
            margin-bottom: 20px;
            border: 1px solid white;
            padding: 10px;
            background: white;
            color: black;
        }
        input, button, select {
            padding: 10px;
            font-size: 18px;
        }
        input {
            width: 60%;
        }
        select {
            width: 20%;
        }
        button {
            width: 18%;
            margin-left: 2%;
            background: #ff4081;
            color: black;
        }
    </style>
</head>
<body>
    <div id="container">
        <h1>Parenting Assistant - know about your child</h1>
        <p>अपने बच्चे के बेहतर भविष्य के लिए समर्पित</p>
        <div id="chatbox">
        </div>
        <form id="chat-form">
            <select id="language" required>
                <option value="" disabled selected>Select your language</option>
```

```
            <option value="en">English</option>
            <option value="hi">Hindi</option>
            <option value="ta">Tamil</option>
            <option value="ml">Malayalam</option>
            <option value="te">Telugu</option>
            <option value="kn">Kannada</option>
        </select>
        <input type="text" id="question" placeholder="Type your question here..." required>
        <button type="submit">Ask</button>
    </form>
</div>
<script>
    $(document).ready(function() {
    $('#chat-form').on('submit', function(e) {
        e.preventDefault();  // Prevent the form from being submitted normally
        let question = $('#question').val();  // Get the value of the question input

        // Send a POST request to the server
        $.ajax({
            url: '/ask',
            method: 'POST',
            contentType: 'application/json',
            data: JSON.stringify({
                question: question,
                language: $('#language').val() // Include the selected language
            }),
            dataType: 'json',
            success: function(data) {
                let answer = data.answer;  // Get the answer from the response

                // Add the question and answer to the chatbox
                $('#chatbox').append('<p>You: ' + question + '</p>');
                $('#chatbox').append('<p>AI: ' + answer + '</p>');

                // Clear the question input
                $('#question').val('');
            },
            error: function() {
                // This function will be called if the request fails
                alert('An error occurred. Please try again.');
            }
        });
    });
});
</script>
</body>
</html>
```

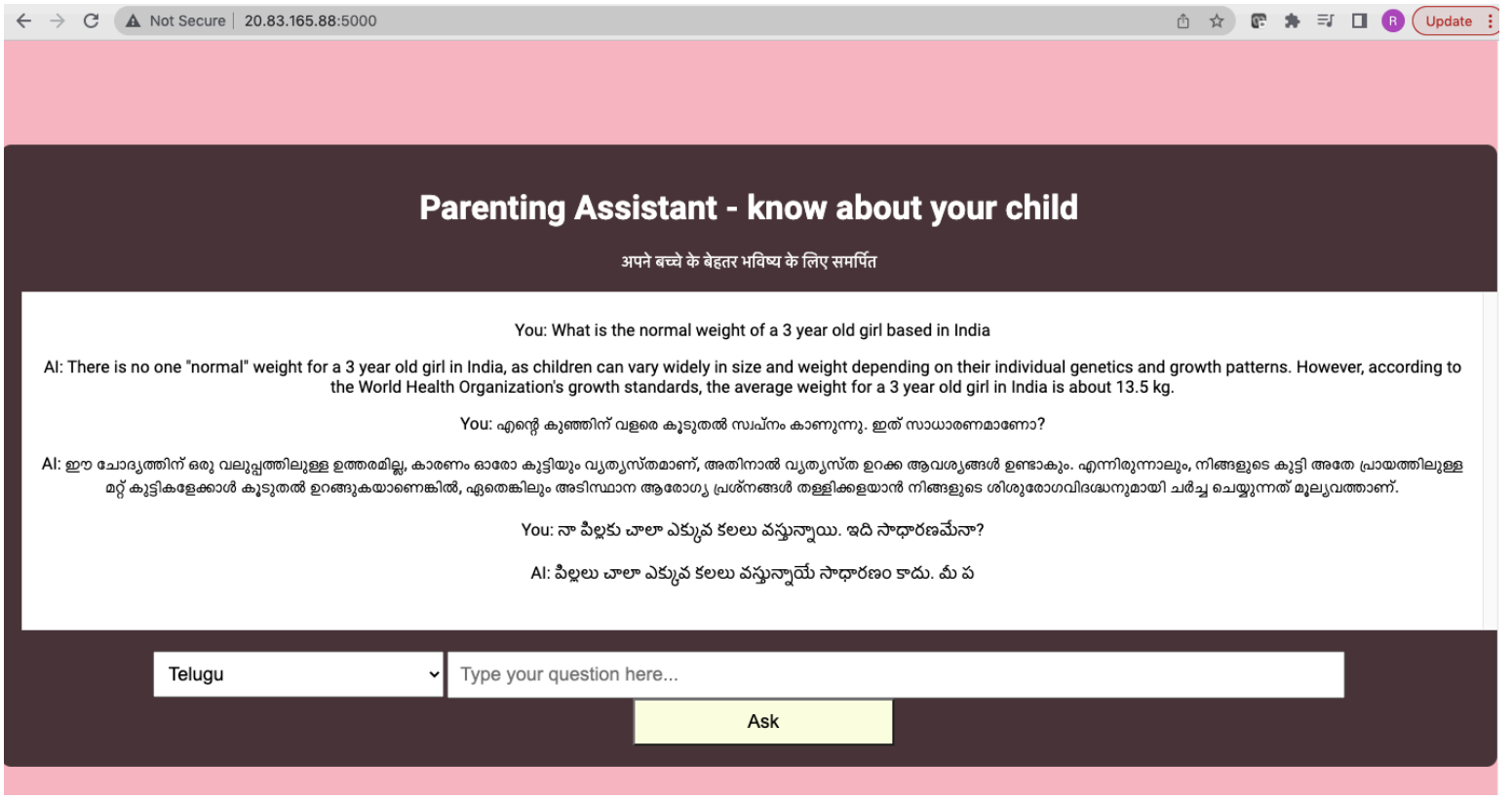
Step 4: Execute the program app.py like below:

python3 app.py

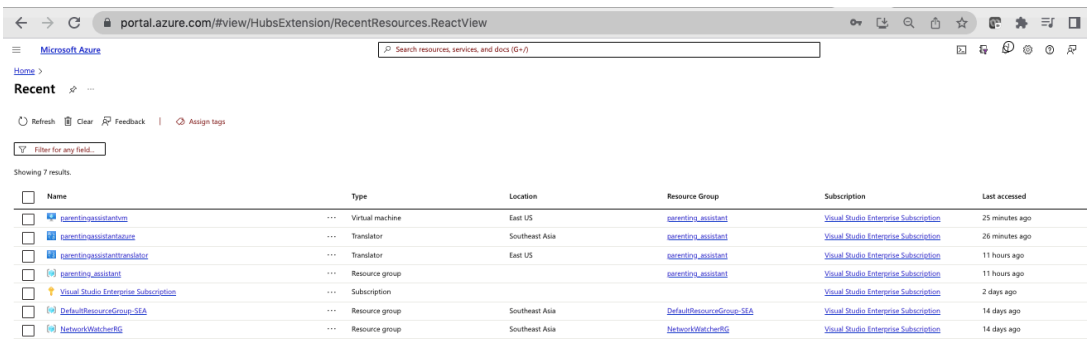
Application will be accessible as shown below:

User can select the language of their choice and ask questions in regional language as shown below. Respective responses from GPT will be reverted back.

Translator API enables the language conversion from regional to English and vice versa



Services used for this blog:



Using the requirements.txt, Dockerfile and Kubernetes manifest files and ACR, we have deployed the application to AKS for scalability as well.

requirements.txt

```
flask
openai
requests
```

Dockerfile

```
FROM python:3.7
WORKDIR /app
COPY requirements.txt /app
RUN pip install -r requirements.txt
COPY . /app
EXPOSE 5000
CMD ["python", "app.py"]
```

Kubernetes manifest files:

Deployment.yaml

```
apiVersion: apps/v1
kind: Deployment
metadata:
 name: parenting-assistant
spec:
 replicas: 3
 selector:
  matchLabels:
   app: parenting-assistant
 template:
  metadata:
   labels:
    app: parenting-assistant
  spec:
   containers:
   - name: parenting-assistant
    image: <your-dockerhub-username>/parenting-assistant:latest
    ports:
    - containerPort: 5000
```

Service.yaml

```
apiVersion: v1
kind: Service
```

```
metadata:
  name: parenting-assistant-service
spec:
  selector:
    app: parenting-assistant
  ports:
    - protocol: TCP
      port: 80
      targetPort: 5000
  type: LoadBalancer
```

Challenges Faced:

We encountered a few challenges during the implementation process.

1. **Language conversion**: Identifying the solution for language conversion and integrating the same for supporting regional language was a challenge. The efficient translation of questions and answers between regional language and English was a significant challenge, given the complexity of the languages.

2. **Understanding parenting queries**: Providing relevant answers to parenting questions was another hurdle.

3. **Ensuring the reliability of the answers**: As this application is about parenting, it is crucial to ensure that the information provided is accurate and safe. Thus, there was a challenge to make sure the AI does not provide misleading information. To combat this, thorough testing and monitoring of the model's responses were conducted.

Benefits:

1. **24/7 Assistance**: The parenting assistant can provide constant help to parents, particularly helpful during off-hours when immediate assistance is not available.

2. **Multi-language Support**: With the Translator API, the app can cater to non-English speaking parents and can be easily expanded to other languages in the future.

3. **Personalized Responses**: With the power of GPT, the app provides personalized responses based on the question context, making it more relatable and useful.

Conclusion:

The "Parenting Assistant" web application brings the power of AI and multilingual support to parenting, providing a valuable resource for new parents. Despite the challenges encountered during the development, the final product offers a readily available and easily accessible source of parenting assistance. The blend of AI and human touch in this application creates a valuable and unique resource in the world of parenting.