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/// <summary>
/// Starts recording from the first available microphone.
/// </summary>
public void StartRecording()
{
    if (Microphone.devices.Length == 0)
    {
        Debug.LogWarning("No microphone detected.");
        return;
    }

    microphoneDevice = Microphone.devices[0];
    recordingClip = Microphone.Start(microphoneDevice, false, recordingLength, sampleRate);
    IsRecording = true;
    Debug.Log("➤ Recording started..."); 
}

/// <summary>
/// Stops recording and begins sending the audio to Whisper for transcription.
/// </summary>
public void StopRecording()
{
    if (!IsRecording) return;

    Microphone.End(microphoneDevice);
    IsRecording = false;
    Debug.Log("🔴 Recording stopped. Sending to AI...");

    string tempFilePath = Path.Combine(Application.temporaryCachePath, "recorded_audio.wav");
    SaveWavFile(recordingClip, tempFilePath);

    StartCoroutine(SendToWhisper(tempFilePath));
}

/// <summary>
/// Sends the recorded WAV file to OpenAI Whisper for transcription.
/// </summary>
private IEnumerator SendToWhisper(string filePath)
{
    byte[] audioData = File.ReadAllBytes(filePath);

    WWWForm form = new WWWForm();
    form.AddBinaryData("file", audioData, "audio.wav", "audio/wav");
    form.AddField("model", "whisper-1");
    form.AddField("language", "ro"); // force Romanian

    using (UnityWebRequest request =
UnityWebRequest.Post("https://api.openai.com/v1/audio/transcriptions", form))
    {
        request.SetRequestHeader("Authorization", "Bearer " + openAiApiKey);

        yield return request.SendWebRequest();

        if (request.result == UnityWebRequest.Result.Success)
        {
            ParseWhisperResponse(request.downloadHandler.text);
            ForwardTextToAI();
        }
        else
        {
            Debug.LogError("✖ Whisper API error: " + request.error + "\n" +
request.downloadHandler.text);
        }
    }
}

/// <summary>
/// Extracts the text result from Whisper's JSON response.
/// </summary>
private void ParseWhisperResponse(string jsonResponse)
{
    try
    {
        var json = SimpleJSON.JSON.Parse(jsonResponse);
        ConvertedText = json["text"].Value.Trim();
        Debug.Log("✓ Transcribed text: " + ConvertedText);
    }
    catch
    {
        Debug.LogError("✖ Failed to parse Whisper response.");
        ConvertedText = "";
    }
}

/// <summary>
/// Sends the converted text to the AI NPC as a question.
/// </summary>
private void ForwardTextToAI()
{
    if (string.IsNullOrWhiteSpace(ConvertedText)) return;

    npcController.SetInputText(ConvertedText);
    aiConnection.SetQuestion(ConvertedText);
    aiConnection.AskAI();
}

/// <summary>
/// Saves the recorded AudioClip to a WAV file.
/// </summary>
private void SaveWavFile(AudioClip clip, string filePath)
{
    using (FileStream fileStream = new FileStream(filePath, FileMode.Create))
    {
        int samples = clip.samples * clip.channels;
        float[] data = new float[samples];
        clip.GetData(data, 0);

        byte[] wavBytes = ConvertAudioClipToWav(data, clip.frequency, clip.channels);
        fileStream.Write(wavBytes, 0, wavBytes.Length);
    }
}

/// <summary>
/// Converts float audio samples to WAV format.
/// </summary>
private byte[] ConvertAudioClipToWav(float[] samples, int sampleRate, int channels)
{
    // Normalize audio
    float max = 0f;
    foreach (float sample in samples) max = Mathf.Max(max, Mathf.Abs(sample));
    if (max > 0f)
        for (int i = 0; i < samples.Length; i++) samples[i] /= max;

    using (MemoryStream stream = new MemoryStream())
    using (BinaryWriter writer = new BinaryWriter(stream))
    {
        int sampleCount = samples.Length;
        int byteCount = sampleCount * 2;

        // WAV header
        writer.Write(System.Text.Encoding.UTF8.GetBytes("RIFF"));
        writer.Write(36 + byteCount);
        writer.Write(System.Text.Encoding.UTF8.GetBytes("WAVE"));
        writer.Write(System.Text.Encoding.UTF8.GetBytes("fmt "));
        writer.Write(16);
        writer.Write((short)1); // PCM
        writer.Write((short)channels);
        writer.Write(sampleRate);
        writer.Write(sampleRate * channels * 2);
        writer.Write((short)(channels * 2));
        writer.Write((short)16);
        writer.Write(System.Text.Encoding.UTF8.GetBytes("data"));
        writer.Write(byteCount);

        // Audio data
        foreach (float sample in samples)
        {
            short s = (short)(Mathf.Clamp(sample, -1f, 1f) * short.MaxValue);
            writer.Write(s);
        }

        return stream.ToArray();
    }
}

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