

Instituto Tecnológico y de Estudios Superiores de Monterrey



**Tecnológico
de Monterrey**

Inteligencia artificial avanzada para la ciencia de datos II (Gpo 503)

Proyecto Final NLP para evaluar Competencias

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Equipo 2

RESUMEN

El proyecto se centra en el desarrollo de una interfaz utilizando Streamlit que integra varias API de Procesamiento de Lenguaje Natural (NLP) y Reconocimiento de Voz. La interfaz permite cargar archivos de audio, reproducirlos en la página, realizar transcripciones automáticas, generar resúmenes de los contenidos transcritos y llevar a cabo un análisis de sentimientos sobre el contenido del audio. La integración de herramientas como OpenAI y TextBlob permite un procesamiento eficiente del audio y el texto resultante para proporcionar insights valiosos sobre el contenido del mismo.

Este proyecto ha sido una experiencia fascinante para explorar y aplicar diversas herramientas de NLP y procesamiento de audio. La capacidad de transcribir y analizar el contenido de archivos de audio de manera automatizada presenta un gran potencial en diversos ámbitos, desde la investigación hasta aplicaciones prácticas en la industria. La combinación de herramientas como Streamlit, OpenAI y TextBlob ofrece una interfaz interactiva y funcional que puede ser de gran utilidad para tareas de análisis de contenido multimedia. La facilidad de integración de estas herramientas en Python mediante Streamlit abre la puerta a una amplia gama de aplicaciones y posibilidades para la exploración y el análisis de datos de audio y texto. Además, la capacidad de interpretar los resultados del análisis de sentimientos proporciona una perspectiva valiosa sobre el tono emocional del contenido del audio, lo que puede ser crucial en diversas aplicaciones, desde la monitorización de la satisfacción del cliente hasta el análisis de discursos públicos.

En resumen, este proyecto ofrece una muestra poderosa de cómo las tecnologías de NLP y procesamiento de audio pueden combinarse para crear soluciones innovadoras y útiles en el ámbito del análisis de contenido multimedia.

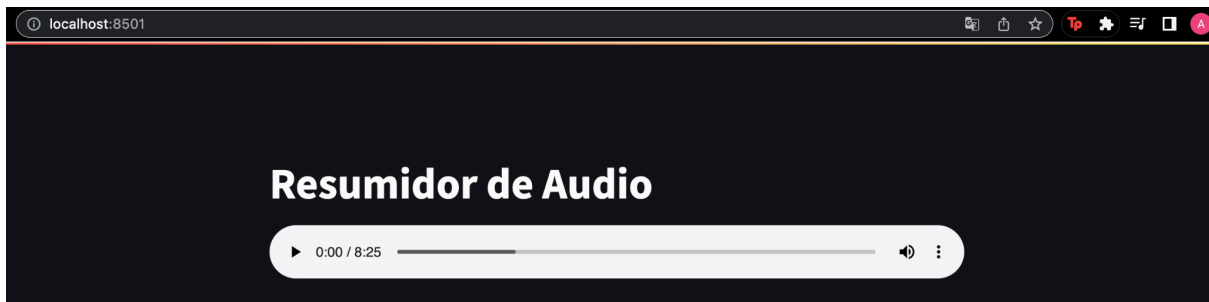
PRINT SCREENS

1. Interfaz Streamlit antes de usarse

```
[(base) andreagalicia@MacBook-Air-de-Andrea-2 Desktop % streamlit run proyectofinalNLP.py

You can now view your Streamlit app in your browser.

Local URL: http://localhost:8501
Network URL: http://192.168.1.65:8501
```



2. Pantalla con la salida del transcriptor

Transcripción:

Especially, and I would even argue in the last four weeks, you really can't build fitness for the Ironman distance, but you can ruin your fitness for the Ironman distance, especially within the last two to three weeks, by, because, so it takes, it takes your body to adapt to a full load, a full Ironman load, it takes four to six weeks for your body to fully adapt to it, for you to go through the full depression cycle, all the way through the compensation cycle, and come back to the place where you're ready to race again. So if you take, if you take your body, and you're in that super compensation phase, and you start training in that, which is gonna be in these last two weeks, which you're in right now, and you add load to it, and drop down again, you're gonna lose everything that you gained from those big efforts that you did in the four to six weeks out from your race, okay? So you have to give your body time to rest, you need to let your body fully recover from those efforts, and even get stronger. So you can keep the sword sharp by doing short, quick efforts, you can get out the door to work out some of your, whatever your issues are, if they're mental, I need to go out and do something, fine, zone one, zone two, easy, 30, 45 minutes to at least open the body up, and remind yourself what you're gonna be doing, those things are fine. No weight training in the last two to four weeks, right now, you know, that does not belong in a program in the last two weeks for sure, I'd recommend usually even in the last four weeks, unless you've been super consistent with it, all the way through your, all the way through your training. Like not even squat, or push up, oops, yeah, stop, today, it's not worth it. And how about the volume, I mean, I look at my schedule, it's like 50% of my peak, you think it should be? That's appropriate, right? Yeah. Yeah. So you wanna be going from your peak volume, you should be cutting back to like 75%, four weeks out, two thirds, three weeks out, and then two weeks out, you should be almost half, half of your peak volume. Okay. Yeah. And then in the last week, it really depends, everybody's different, everybody tapers differently. And so you're probably not gonna get it right on your first Ironman taper, but that's okay, right? I mean, and you probably didn't get it right when you did your first taper to an Olympic distance either. We'll find that one out. Yeah, figure it out. Yeah. And each time you do it, you do something a little bit different. Yeah. How about the nutrition? I mean, I know people, that's a big thing for Ironman. I know people, you know, train perfectly. One thing, you know, I found it challenging during the, even training session, like two weeks ago, I finished bike and finished like a half distance marathon, almost like 12 or 13 miles. I just immediately shut down. It's just like drastically, my body, one minute is feel really good, and the second minute I was heavy, I lose everything, you know, I

found it challenging during the, even training session, like two weeks ago, I finished bike and finished the a half distance marathon, almost like 12 or 13 miles. I just immediately shut down. It's just like drastically, my body, one minute is feel really good, and the second minute I was heavy, I lose everything, you know, I have to walk. So I don't know. Is there any, do you, have you seen somebody like this or? Absolutely. What's going on? Every Ironman race, there's people that are going through that. Yeah. Like, even Josh, he told, last year he did a, for Ironman, he got a GI issue, so ruined everything. How, how to, how to, first, what's the, what's the reason for that? The second, how do we prevent? Who knows? I mean, there's any number of reasons, but the best thing is to practice it, like, during your training, right? So you want to find that, what works for you in training and take that to your race. That's the most important thing is, is, is trying different things, finding things that don't work and avoiding them, and then making sure that when you get to your race, you have adequate nutrition where you don't start to short on calories, like run out, or you want to make sure you have some redundancy. So if you've been training on goos and they have stingers or whatever at the race and you completely switch because you ran out, you're putting yourself at risk for, for having a GI, potential GI issue. Ironman announces what they're going to use, you know, weeks, months, year in advance typically, so you can practice on, I mean, this is for, this isn't for this race, this is for the next race, right? This is for World Bay, this is for Oregon, but you can train on what they're going to have there and know if it's going to work for you, can't bring it up. Yes, you can absolutely bring it up, but if you, if you, so then that's what I'm saying is when you're practicing before, training before, you dial everything in ahead of time, but there's always, that's what I'm saying, but there's, you should have redundancies because people drop water bottles, people drop gels, people lose entire packs of stuff. You take longer than you expected. You take longer than you expect. You never know. So you should have redundancies on the race. Is there any, like a rule of thumb or some, I'm practicing like a hundred gram goo every hour, you know, in combination with infinity, it's infinity, the sports drink, infinite, infinite sports drink. But yeah, I think that's just on bike, on the run, I think that's what happens. Last time I was running, you know, feeling good, I didn't take enough goo and cause you cannot carry a bottle with you during training. I mean, in the race, yes, they'll provide the drink. So I think I'm short on that and your body just, everything I think is kind of slow ball, right? You're pushing your body to a limit and then from there you just shut down. I don't know. Is there any tips for the running portion, nutrition, just keep eating, right? I think that's what happened. It wasn't really hot. It's just my body. I mean, I don't want to eat. That's a part, right? Yeah. There's a part where you get to the, your stomach is saturated salt. A lot of times, I don't know, maybe that's where Mike was headed with his question, but salt a lot of times is one of the things

3. Resumen

Resumen:

En el audio, el hablante menciona que es importante no arruinar tu estado físico para la distancia del Ironman especialmente en las últimas dos o tres semanas antes de la carrera. Explica que el cuerpo necesita tiempo para adaptarse y recuperarse completamente de los esfuerzos intensos y que agregar más carga en esas últimas semanas puede hacer que pierdas todo lo que has ganado en los meses previos.

Recomienda hacer entrenamientos cortos y suaves para mantenerse activo y recordar cómo se sentirá durante la carrera. No recomienda hacer entrenamiento con pesas en las últimas semanas, a menos que se haya sido muy consistente con ello durante todo el entrenamiento.

En cuanto al volumen de entrenamiento, menciona que alrededor de cuatro semanas antes de la carrera se debe reducir a aproximadamente el 75% del máximo, luego a dos tercios tres semanas antes y casi la mitad dos semanas antes de la carrera.

En cuanto a la nutrición, menciona que es importante practicar durante los entrenamientos lo que se va a consumir durante la carrera para encontrar lo que funciona mejor para cada uno. También menciona la importancia de tener redundancia en caso de que se pierdan geles o bebidas durante la carrera.

Recomienda asegurarse de tener suficientes calorías y equilibrio de sal para facilitar la absorción de los carbohidratos.

En resumen, el hablante enfatiza la importancia de no sobrecargar el cuerpo en las últimas semanas antes de la carrera, permitiendo una buena recuperación y adaptación, y practicar la nutrición adecuada durante los entrenamientos.

4. Sentimientos

Análisis de Sentimientos:

Sentimiento: Positivo

CÓDIGO

```
import streamlit as st
import openai
from textblob import TextBlob
import librosa.display
import matplotlib.pyplot as plt
# Clave API de OpenAI
mi_clave_api = "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"
st.title("Resumidor de Audio")
clave = mi_clave_api
cliente_openai = openai.OpenAI(api_key=clave)
# Ruta del archivo de audio
archivo_audio = '/Users/andreagracia/Desktop/Whisper-ChatGPT-Audio/MA1.m4a'
# Función para transcribir audio utilizando OpenAI
def transcribir_audio(archivo_audio):
    with open(archivo_audio, "rb") as audio_file:
        transcripcion = cliente_openai.audio.transcriptions.create(
            model="whisper-1",
            file=audio_file
        )
    return transcripcion.text if transcripcion else "No se pudo transcribir el audio."
# Función para análisis de sentimientos utilizando TextBlob
def analizar_sentimientos(texto):
    blob = TextBlob(texto)
    sentimiento = blob.sentiment.polarity
    if sentimiento > 0.1:
        return "Positivo"
    elif sentimiento < -0.1:
        return "Negativo"
    else:
        return "Neutral"
# Reproducción de audio
audio_bytes = open(archivo_audio, 'rb').read()
st.audio(audio_bytes, format='audio/mpeg')
# Transcripción de audio
st.subheader("Transcripción:")
texto_transcrito = transcribir_audio(archivo_audio)
st.write(texto_transcrito)
# Resumen del audio (utilizando OpenAI GPT-3)
messages = [
    {"role": "system", "content": "Resumen del audio, por favor."},
    {"role": "user", "content": texto_transcrito}
]
response = cliente_openai.chat.completions.create(
    model="gpt-3.5-turbo",
    messages=messages
)
resumen_audio = response.choices[0].message.content
st.subheader("Resumen:")
st.write(resumen_audio)
# Análisis de sentimientos en la transcripción
st.subheader("Análisis de Sentimientos:")
sentimiento = analizar_sentimientos(texto_transcrito)
st.write(f"Sentimiento: {sentimiento}")
```