ZenZone

Overview

- App Name: ZenZone
- App Description: An App to help teenagers deal with stress more effectively and efficiently
- Technologies Used: MIT App Inventor/ChatGPT/TinyDB
- Websites Used: Spotify/ youth.gov/ teenhelp.org
- Key Features: Generative AI, Personalized Recommendations, Gamification, Stress Relieving Exercises, App Dedicated for Teenagers

Stress Related Problems

With peers

Competitive environment and peer pressure

With Self

Self deprecation, shattered ego, and failed expectations

With School

Academic pressure, such as enormous amount of homework, tests, etc

With parents

High expectations from parents that cause high stress level

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Exercises to Relieve Stress

Journaling

Users can vent their feelings and frustrations, as well as refer to past journals

Music

Users can listen to catered playlists based on their mood

Physical Exercises

Timed exercises for users to relieve pent up emotions

Meditation

Timed meditation log and reflection to calm themselves

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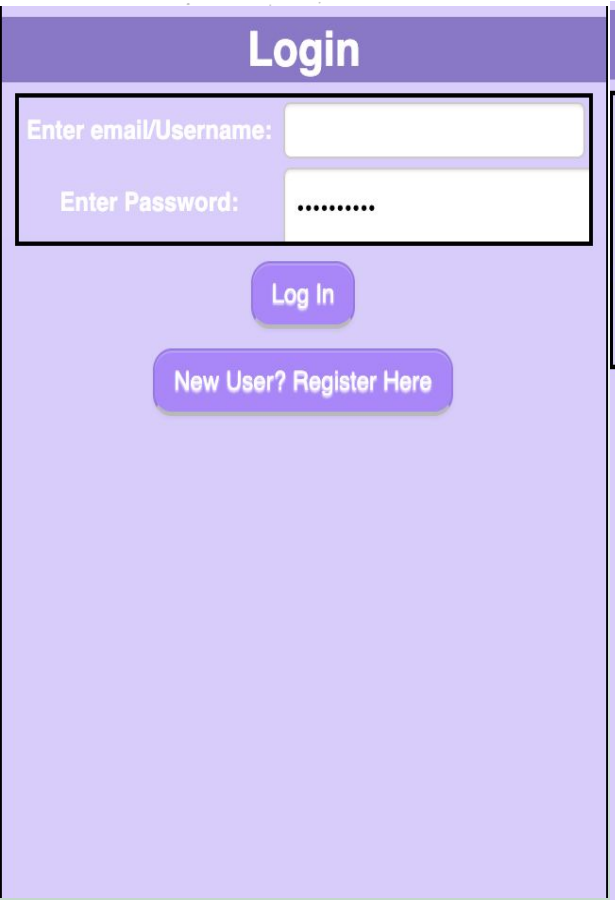
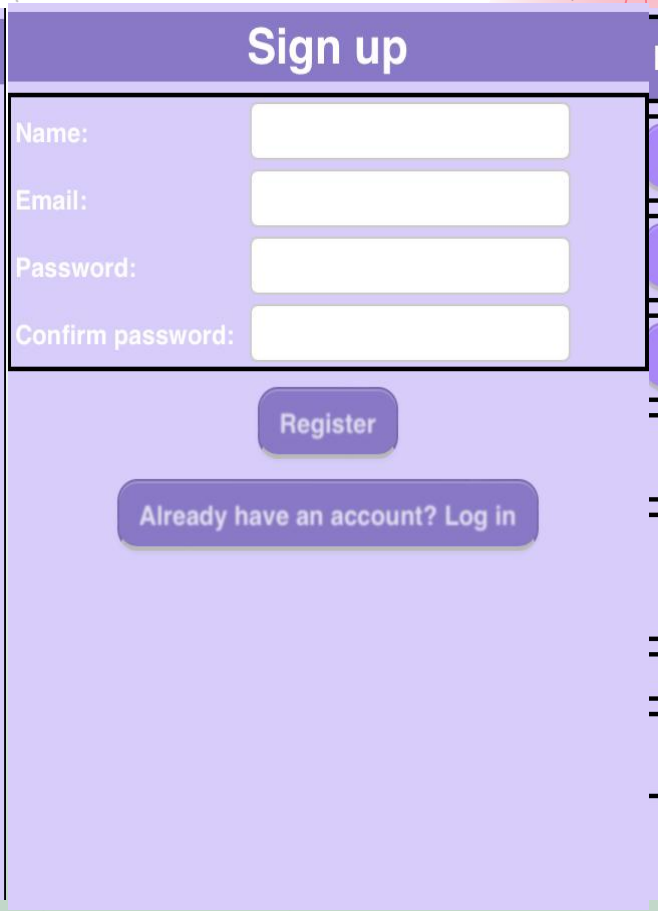
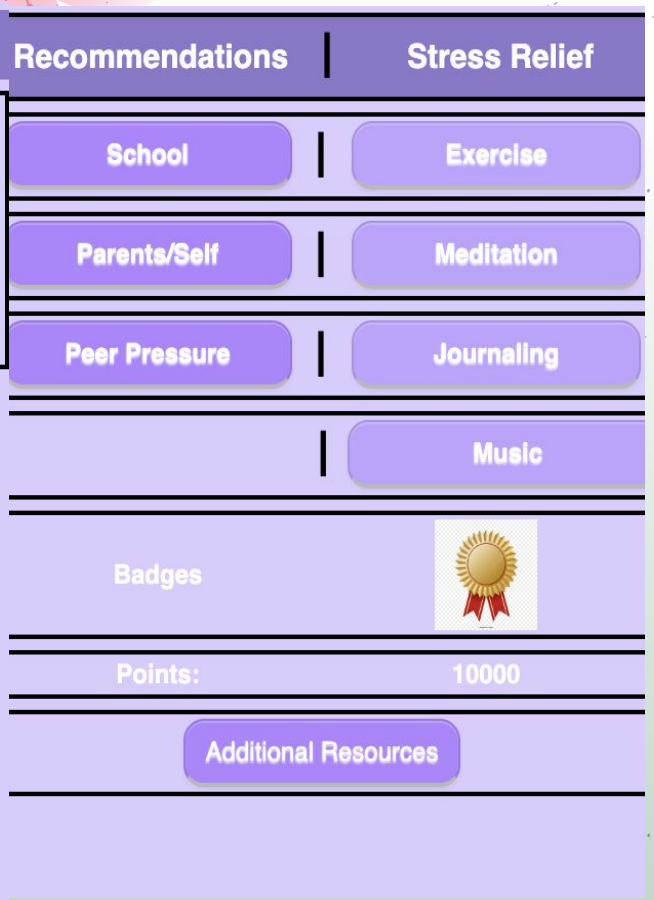
Login



Sign Up



Home Page



Questionnaire

1. On a scale of 1 to 5, how stressed do you feel about your schoolwork? (1 - Very Little to 5 - A Lot)

Slider value:

2. Are you overwhelmed by your academic workload? (Yes/No)

Yes No

3. Do you often feel anxious about exams and assignments? (Yes/No)

Yes No

4. Are you satisfied with your academic performance? (Yes/No)

Yes No

5. How much time do you spend on homework each day? (1 - Very Little, 5 - A Lot)

Slider value:

6. Do you often procrastinate when it comes to homework? (Yes/No)

Yes No

7. Are you able to manage your homework effectively?

Yes No

8. Do you feel pressured to fit in with your peers? (Yes/No)

Yes No

9. Are you comfortable expressing your opinions and feelings with your friends? (Yes/No)

Yes No

10. Have you experienced any bullying or conflicts with peers? (Yes/No)

Yes No

14. Are you experiencing changes in your sleep patterns? (Yes/No)

Yes No

15. Do you have trouble concentrating on tasks? (Yes/No)

Yes No

16. Have you lost interest in activities you used to enjoy? (Yes/No)

Yes No

Show Result Clear Choices

Your result:
Your score:

Home Page Other Resources

Additional Resources

Recommendations

Additional Resources

For School-Related Stress:
1. Encourage open communication with teachers to address academic challenges.
2. Establish a study schedule to manage their workload effectively.
3. Explore tutoring or academic support services if needed.

For Homework-Related Stress:
4. Teach time management skills to prevent procrastination.
5. Create a quiet and organized study space at home.
6. Monitor their workload and provide guidance when they're overwhelmed.

For Peer-Related Stress:
7. Promote healthy friendships and social activities.
8. Teach conflict resolution skills to handle peer conflicts.

TeenHelp Website: https://www.teenhelp.org/
2. YoungMinds:
Recommendation:
- YoungMinds provides information, resources, and a helpline specifically for young people's mental health.
- Encourage teenagers to explore their website for valuable insights and support.
YoungMinds Website: https://youngminds.org.uk/

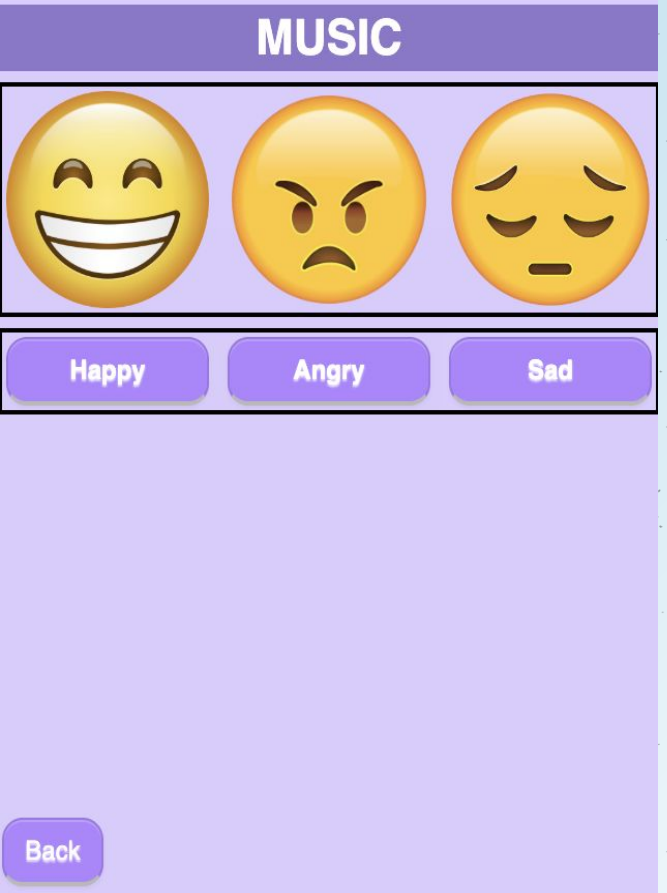
3. Youth.gov
- It offers resources on various youth-related topics, including mental health.
- It provides valuable information for both teenagers and those who support them.
Youth.gov website: https://youth.gov/youth topics/youth-mental-health

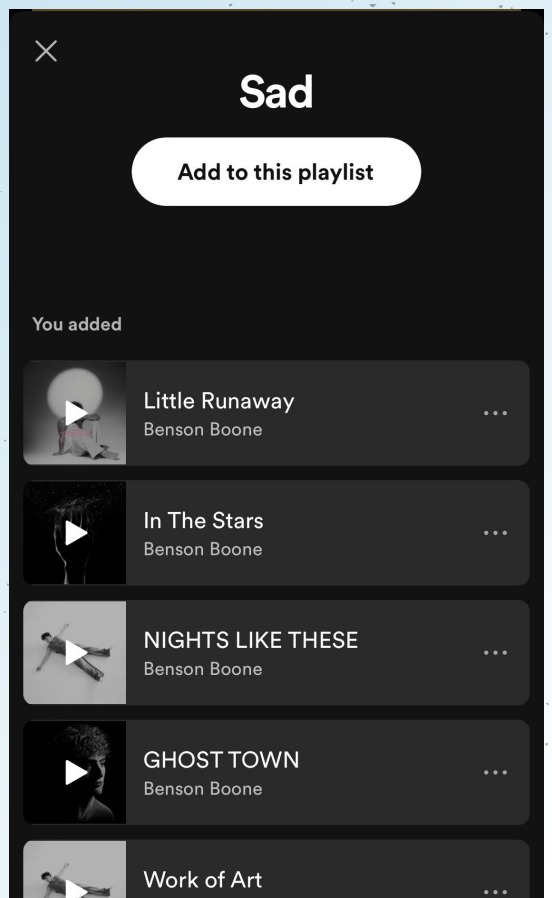
Home Page

Reccomendations

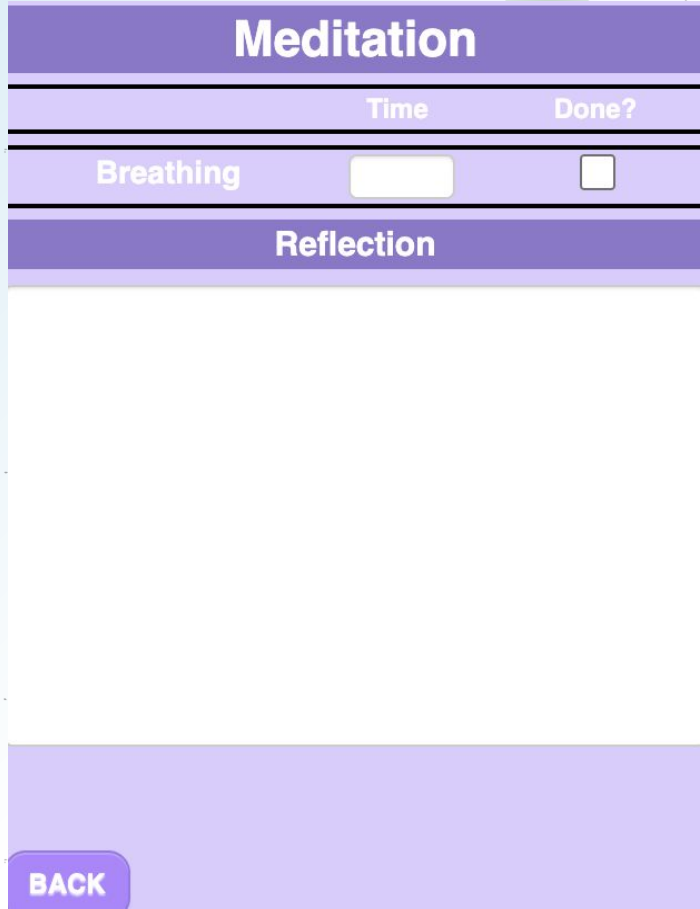
Recommendations are created by generative AI based on your questionnaire response.

Music





Meditation



Journaling

DRAW

JOURNAL

MOOD

BACK SUBMIT HISTORY

Journaling History

DRAW

JOURNAL

MOOD

Back

Exercise

Physical Exercise

Choose Exercise Choose Time

Back

Acknowledgements

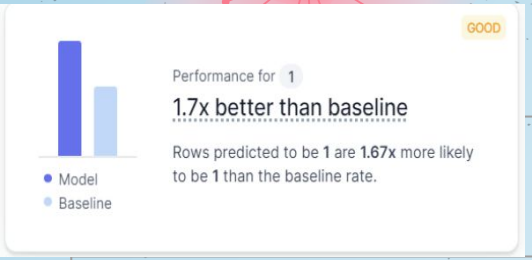
Thank you to the ACP Foundation for hosting the hackathon.

We appreciate our parents for providing support while we were building this app.

We are also grateful to Dr. Meng Yu for his valuable feedback and insights.

Our Steps

1. **Objective** - to help teens alleviate their stress by listening to music, doing physical exercise, meditation and journaling
2. **Data Collection for Machine Learning Model** – created a google forms to help collect data (many responses from schoolmates and friends)
3. **Try different Platforms** – We tried using ML.net and akkio.com to create and test these different machine learning models
4. **Finalize + Code** – Used GPT4 to finalize and finish creating the final model → Decision tree model

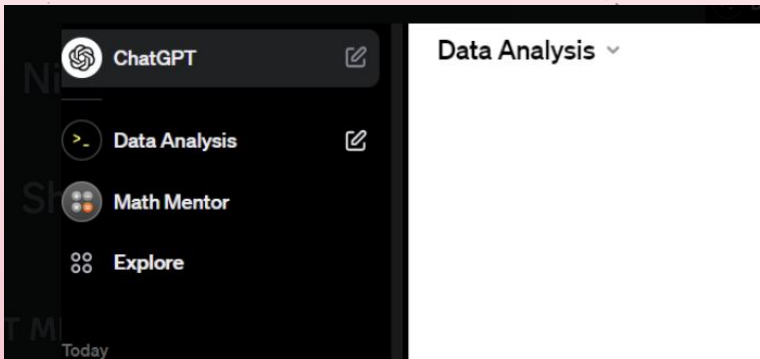


Pros & Cons

	Pros	Cons
ML.net Accuracy: 73% (best model: LbfgsMaximumEntropyMulti)	- Powerful platform and the model tested from the platform has high accuracy - 80/20 validation available	- It does have some bugs on loading data
Akkio Accuracy: 80% (no model provided)	- It has adopted some deep learning neural network models - Helped to visualize the data and find out data distributions for each category	- No 80/20 validation available - cannot reveal which model has the highest accuracy
GPT 4 Accuracy: 80% (best model: Decision Tree Classifier)	- It offered great flexibility and choice of models - fully validation available using 80/20 rule	- Need to know basic knowledge about AI modeling to ask the right questions

Conclusions (What we choose)

- After trying all the models and apps, **GPT4** worked the **best** because GPT4 helps **fully validate** the model using the 80-20 rule
- GPT4 offers the **Highest Accuracy & Flexibility** in terms of trying all the different kinds of model
- Model can be deployed in all **different code formats**. E.g. Python, C++, C#, Java, etc
- Based on the research, **Bayes** method works well with limited data sets. However, from our study, it **offered minor but not significant improvements**



Future Improvements

- larger data sets to help improve our model
- We'll also try to use synthetic data for model training and validation (E.g Jenrocket)

Data in a Table

Data Analysis

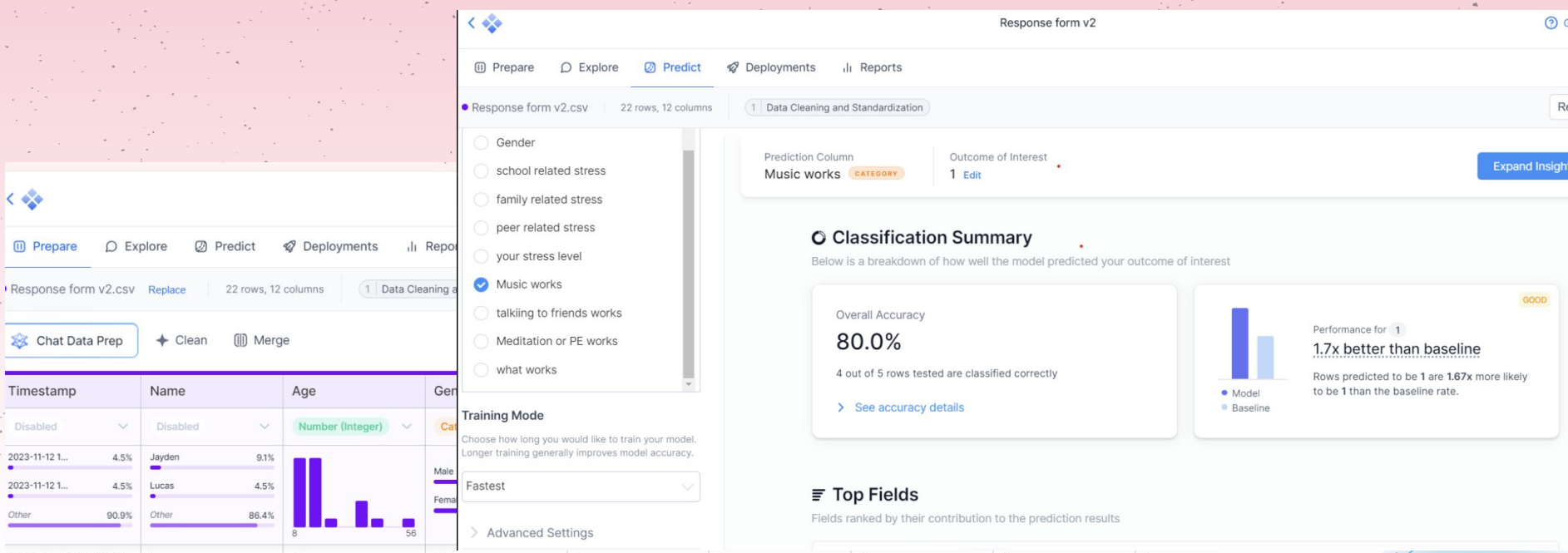
Certainly! I'll create a table that lists all the columns in your dataset along with a brief description. You can then specify which columns you'd like to use as features (inputs) and which column(s) should be the label (target) for the machine learning model.

Here's the table:

Column Number	Column Name	Description	Use as Feature (Yes/No)	Use as Label (Yes/No)
1	Timestamp	Date and time of the response		
2	Name	Name of the respondent		
3	Age	Age of the respondent		
4	Gender	Gender of the respondent		
5	school related stress	Stress related to school		
6	family related stress	Stress related to family		
7	peer related stress	Stress related to peers		
8	your stress level	Overall stress level reported by the respondent		
9	Music works	Effectiven… of music for stress relief		

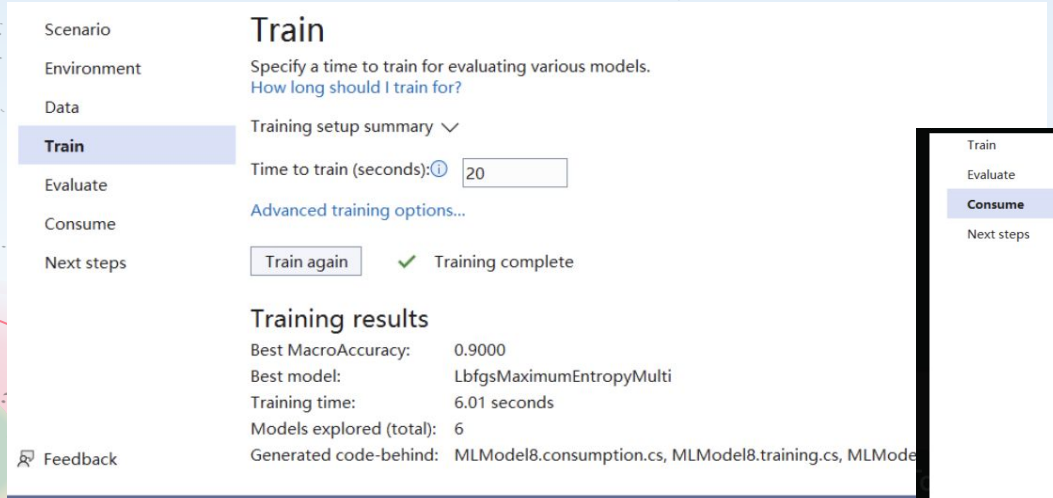
			Music Helps	your stress level	Family Stress	Peer Pressure Stress
Ella Xia	8	Female	1	2	1	0
Leo	13	Male	1	3	0	0
			1	1	1	0
			1	2	1	0
			0	2	1	1
			0	3	0	1
			1	3	1	1
			0	4	1	0
			1	3	1	0
			1	3	1	1
			1	3	0	1
			0	3	0	1
			0	1	0	1
			1	4	0	1
			1	2	1	0
			0	1	1	0
			0	0	0	0
			0	1	1	0
			1	1	2	0	0

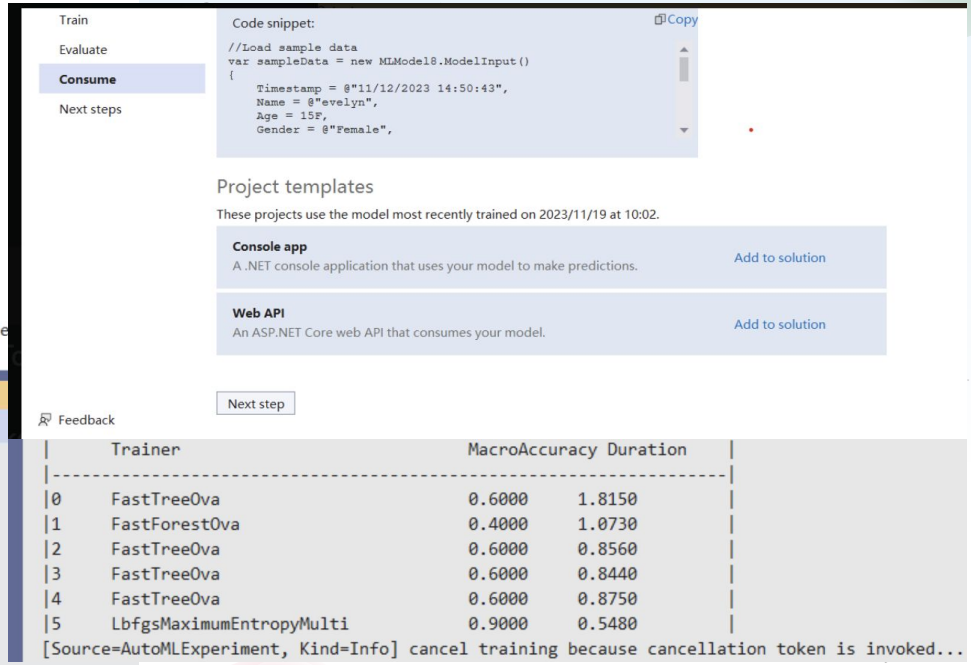
Akkio dataset -> all of our data + Training

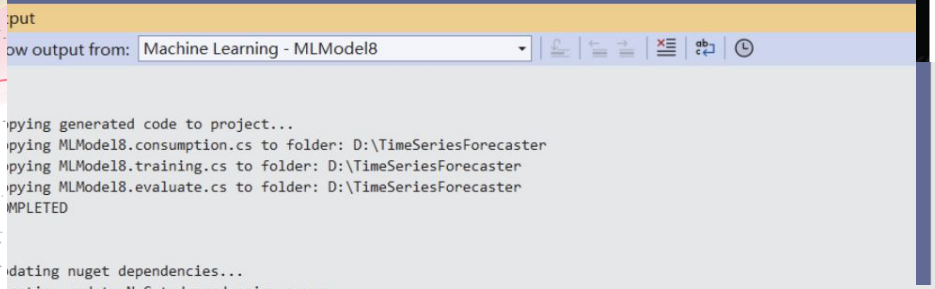


2023-11-12 14:46:07	Lucas	14	Male	1	1	0	2	0
2023-11-12 14:50:43	evelyn	15	Female	1	0	0	3	1
2023-11-13 20:36:12	Jayden	11	Male	1	1	0	1	0
2023-11-13 20:43:55	Jayden	11	Male	1	1	0	2	1
2023-11-13 21:09:10	Brian	15	Male	0	0	1	2	0
2023-11-13 21:10:47	Lucas	15	Male	0	0	1	3	1
2023-11-14 12:25:00	Elly	15	Female	1	1	1	3	0
2023-11-14 12:26:40	Mia Tran	14	Female	0	1	0	4	1

ML.net data set + Training







GPT4 →choosing Model type

You
repeat the above for selecting the row “ talkiing to friends works”

Data Analysis
To repeat the process for the column "talkiing to friends works" as the label, w
steps:

1. Preprocess the data again, setting "talkiing to friends works" as the label anc
   columns as features.
2. Train the same set of models (Decision Tree, Random Forest, SVM, and KNN
   setup.
3. Evaluate and compare their performances.

Let's start by preprocessing the data with "talkiing to friends works" as the tar
train and evaluate the models.

Here are the updated accuracy scores for the models with "talkiing to friends

- **Decision Tree Classifier:** 100%
- **Random Forest Classifier:** 60%
- **Support Vector Machine (SVM):** 40%
- **K-Nearest Neighbors (KNN):** 60%

The Decision Tree Classifier stands out wit erfect accuracy score of 100%
improvement compared to the other models in this context. It's important to note, however, that a

You
train the above with decision tree

Data Analysis
Certainly! Let's train a Decision Tree Classifier using "what works" as the label and employing an 80/20 split for training and validation, just as we did with the other models. After training, I will evaluate the model and provide the accuracy score. Let's proceed with training the Decision Tree model.

The Decision Tree Classifier, trained with "what works" as the label and using an 80/20 data split for training and validation, achieved an accuracy of 80% on the test set. This is a notable improvement compared to the other models we've tested (Logistic Regression, KNN, SVM, and Naive Bayes) for this particular label and dataset.

If you have any further steps in mind or other models you'd like to explore, please let me know!

You
give me deployable model for decision tree

Data Analysis
I will save the trained Decision Tree model to a file, making it ready for deployment. You can download this file and use it in your applica s or for further analysis.

Links

- **Video Link:**
- **App Source Code:** https://github.com/W-LucasS/App-Zenzone.git
- **AI Model Source Code:** https://drive.google.com/file/d/1VpAAVAXtqoMKEH1J3jjlMW2gttuOUFzc/view?usp=drivesdk
- **Akkio**– https://app.akkio.com/project
- **Ml.net** – https://dotnet.microsoft.com/en-us/learn/ml-dotnet/
- **GPT4:** chat.openai.com
- **Design flow chart of the App-** Excalidraw.com/zenzone