Deliverable 3

Due: 2021 March ~~22~~ 28 (asked for extension)

Over the course of MAIS202, you will be completing a machine learning based project of your choice for the final project. You will also demo your project by integrating it into a webapp (or something more advanced). To conclude, you will be writing a blog post to share your project with others.

Submission

The deliverables may be completed individually or in teams of 2-3. Keep in mind that the project scope and grading will take into consideration the size of the team. All deliverables should be electronically submitted on Github and myCourses. They should also be completed with the same academic integrity and standards expected at McGill University. A quick tip: if you are using results or methods from an academic paper, you can go on their arxiv page and download their citation.
Submit both your well-documented code and report.

Deliverable Description

In this deliverable, you will discuss your final training results and your integration approach.
This is a machine learning course, so make sure to focus on the analysis of your results.

1. Final Training Results Compare your final results to your preliminary ones (from the previous deliverable). Have you changed anything to your model since the previous deliverable?

Last deliverable we had tried both KNN and logistic regression.

If so, how have your changes improved the results?

We are now having a lot more accurate results. Note: we are leaning towards having the user inputting the name of one specific song (in a search bar), they would then have to choose from the recommendations (songs having the similar title; as we do not have all Spotify songs in the dataset, we make sure that what the user is looking for is in it).

Now, focus on your final results. Once again, present a detailed analysis of your results, provide
graphs as appropriate. Analysis requirements differ in every field, but reporting the following is
mandatory:

- Confusion matrix and accuracy/precision-recall/logistic loss (classification problems).

In our specific case (recommendation system), confusion matrix and accuracy do not apply.

But here are some examples of how our model works:
Here we inputted `'1gcyHQpBQ1lfXGdhZmWrHP'` which is the song ID of Champagne Problems by Taylor Swift:

Here we get similar songs to it, we chose songs that are 0.999 or more similar to the input song. Note that there are multiple versions of champagne problems in our dataset; such as radioedits etc, those have different songs IDs and different data! That means our model works (technically) as it is finding similar songs to Champagne problems.

	acousticness	artists	danceability	duration_ms	energy	id	instrumentalness	liveness	loudness	mode	name	speechiness	tempo	valence
5113	0.939	['Ethel Merman', 'Robert Middleton', 'Marty Ma...	0.418	194400	0.225	1SecSXFtyYktKYc0qimTmw	0.000000	0.1380	-11.651	1	Moonshine Lullaby	0.0587	168.349	0.326
19922	0.920	['Taylor Swift']	0.462	244000	0.240	0sY6ZUTh4yoctD8VIXz339	0.000000	0.1130	-12.077	1	champagne problems	0.0377	171.319	0.320
20128	0.921	['Taylor Swift']	0.462	244000	0.242	2EliNOReCRCe1ynR6G8yeT	0.000000	0.1130	-12.077	1	champagne problems	0.0376	171.352	0.320
26867	0.905	['Ray Charles']	0.483	197173	0.187	7u17w29WWTiftzGHs8rhpw	0.000004	0.1220	-13.886	1	Funny (But I Still Love You)	0.0439	179.031	0.338
36520	0.958	['John Mayer']	0.496	198200	0.238	78DwRIo6Vj6wqteyerGetr	0.010900	0.0875	-11.026	1	The Heart of Life	0.0301	175.960	0.349
63870	0.974	['The Kossoy Sisters']	0.449	176467	0.212	2fWVXXNvMNBbqhAiQCdZ2Z	0.000000	0.1150	-9.733	1	Little Birdie	0.0403	182.801	0.334
65632	0.925	['Odetta']	0.414	311773	0.215	73e4ndrkfGlxqXAWm9PFvx	0.000869	0.1090	-14.850	1	With God On Our Side	0.0500	167.912	0.335
158571	0.920	['Taylor Swift']	0.463	244000	0.248	6rap8NpGq8LDcVaJWkKFPn	0.000000	0.1130	-12.036	1	champagne problems	0.0374	171.346	0.325
174387	0.920	['Taylor Swift']	0.462	244000	0.240	1gcyHQpBQ1lfXGdhZmWrHP	0.000000	0.1130	-12.077	1	champagne problems	0.0377	171.319	0.320

By deleting the duplicates we get:

	acousticness	artists	danceability	duration_ms	energy	id	instrumentalness	liveness	loudness	mode	name	speechiness	tempo	valence
5113	0.939	['Ethel Merman', 'Robert Middleton', 'Marty Ma...	0.418	194400	0.225	1SecSXFtyYktKYc0qimTmw	0.000000	0.1380	-11.651	1	Moonshine Lullaby	0.0587	168.349	0.326
19922	0.920	['Taylor Swift']	0.462	244000	0.240	0sY6ZUTh4yoctD8VIXz339	0.000000	0.1130	-12.077	1	champagne problems	0.0377	171.319	0.320
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65632	0.925	['Odetta']	0.414	311773	0.215	73e4ndrkfGlxqXAWm9PFvx	0.000869	0.1090	-14.850	1	With God On Our Side	0.0500	167.912	0.335

We listened to the songs, and we do understand the similarity objectively. But, since this is a song suggester, the accuracy of the user liking any of this songs is subjective and cannot be measured.

2. Final demonstration proposal Now that you trained your model, it is time for you to

integrate it in a final product. Don't forget to save your trained weights! You will need them for the integration and/or testing your model.

- Application We want all of you to at least have a landing page type website to demo your
model and results. For more experienced developers, you are welcome to choose something
more advanced.

Discuss your final product, and final integration approach. Describe and justify the choice of stacks and technologies. Provide diagrams as appropriate. Explain your experiences with the technologies you have proposed. If you do not have any, explain how you would come to learn them (eg. online tutorials, etc.)
Do not worry if you do not have any experience in webdev or other types of software development. Discuss with your project leaders, or any other execs, and we will help you out!

We are not done with our landing page/website demo; but what we have so far is uploaded on our github!
https://github.com/aymenboustani/MAIS-202-Deliverable-1/tree/main/app