

MIDI Autofill

Samantha Del Rosario¹, Mason Ashbridge¹, Jorge D. Focchezato¹,
Eric Franklin², and Brian Smith²

¹CS Group 14

²ECE Group 27

Spring 2021

Contents

1	Executive Summary	1
2	Specifications and Requirements	1
3	Research	1
4	Legal, Ethical, and Privacy Issues	2
4.1	Legal	2
4.2	Ethical	3
4.3	Privacy	3

1 Executive Summary

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

Bibliography reference example (Adams 1995)

2 Specifications and Requirements

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

3 Research

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus,

aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

4 Legal, Ethical, and Privacy Issues

4.1 Legal

Copyright of AI generated works is a highly debated issue. It is a common legal opinion that whoever ran the AI would own the generated work, but there is no legal precedent on this matter. There are others that believe the creator of the AI would own the copyright of any generated works by default. We want the end-user to own the copyright to their generated. We may want to include a clause in our license that specifically states that the end-user will own the copyright to their generated works. This can hopefully clear up any concerns to the end-user about ownership and would give users confidence that they can freely use our device without copyright concerns.

The source code of the model and any other libraries we use should be an open source and permissive license. Licenses such as MIT and Apache would be more ideal than a copyleft license, such as the GPL. One of the AI libraries we are evaluating, magenta, uses the Apache 2.0 License, which is great for us. This license will be easy to comply with, as we simply need to include a copy of the license with our code and state if there are any modifications to the code. That is just one example, but it will be important for us to audit the licenses of all our dependencies before distribution to be sure we comply. Especially if we end up using NodeJS, then we may end up with several dependencies indirectly.

Another area of concern in the realm of copyright is the license of the pretrained model. If we use a pretrained model we need to verify that we have license to use and distribute it. The pretrained models would likely not be included in the code repository and could be subjected to a different license. For this project, we will need the ability to distribute copies of the pretrained model. We may even have multiple pretrained models per genre if we accomplish our stretch goal of multiple genres/artists. In such a case we will need to verify the license of all models for each genre. If we cannot find a pretrained models that fits this requirement, then we may need to train our own model. If the source code of the model has a permissive license then it should not be an issue for us to train our own model for distribution, should that be necessary.

4.2 Ethical

There are also many questions about the ethics of AI generated artwork. This is a highly opinionated topic. Many feel great concern that not only does AI have the potential to substitute labor, but also artistic endeavors. Some who have thought that art would be safe from AI are shocked to see that AI currently can produce interesting and thought-provoking art. While it will still be a long time for AI to catch up with human creativity, it is not a misplaced concern. With that said, we believe that this project does not fall into this category of AI, as it is intended as a tool to assist musicians rather than to replace artistic talent. The project's goal is not to replace the musician, but to help foster their creativity. The MIDI autofill function will only continue an existing melody, not generate an entirely new one.

4.3 Privacy

As far as privacy goes, it is a mostly a non-issue for this project, provided our implementation is correct. The MIDI device will not require any network connectivity and will not store any user data. Granted, if we do end up using a microcontroller with network capability, such as a raspberry pi, we should take extra steps to ensure that any networking capability is disable so that the host machine cannot get compromised. Although it would be a bit of a stretch, if the host machine can be compromised through the MIDI device, then that could lead to major privacy violations.

References

Adams, D. (1995). *The Hitchhiker's Guide to the Galaxy*. San Val. ISBN: 9781417642595.
URL: <http://books.google.com/books?id=W-xMPgAACAAJ>.