

# COS126: Final Project Proposal Template

Fall 2022

**Instructions:** Make a copy of this Google doc and respond to all required questions. Then, download this Google doc as a PDF and change its name to `proposal.pdf`. Finally, upload `proposal.pdf` to [TigerFile](#).

Required questions are **bolded**; however, we highly recommend you answer all questions as they will help you better plan for your project. If you plan to use external sources (e.g., datasets, libraries, algorithms), please fill out the relevant sections under "External Sources".

**Given the time-sensitive nature of approving proposals, late proposals will not be accepted for a grade.**

## 1. Basic Information

**Name #1:**

**NetID #1:**

**How would you (member #1) self-describe your comfort level with regards to programming?**

- ☐ Less comfortable
- ☒ Somewhat comfortable
- ☐ More comfortable

Name #2:

NetID #2:

How would you (member #2) self-describe your comfort level with regards to programming?

- ☐ Less comfortable
- ☐ Somewhat comfortable
- ☐ More comfortable

## 2. Proposal Meeting Selection

**Before moving on**, sign up for a 10-min appointment for your proposal review meeting here ([sign up link](#)). Everyone in your group must attend this meeting, so choose a time that works for all group members. We recommend you choose a preceptor of one of your group members, but this is not a requirement. The preceptor you choose to meet with will be your designated project advisor.

**When and where is your proposal review meeting (e.g. Tue, Nov 29 at 3pm)?**

Wed, Nov 30 at 4:15pm

**Which preceptor did you schedule a meeting with?**

Gabriel Contreras

### 3. Project Description

**What is your tentative project title?**

BachBot-SATB Chorales Generated with N-Gram Algorithm

**Please summarize your project in 1 paragraph.**

Using a N-Gram algorithm similar to the one used in “Text Generator,” I hope to implement an algorithm that can generate passages of four part chorales in Bach’s style. The algorithm will take in 370 compositions of Bach in order to create the n-gram frequency table, the compositions are taken from an existing library (<https://github.com/craigsapp/bach-370-chorales>). User input would be limited to the length of the passage and the key of the composition.

Why did you choose this project idea and what do you hope to learn with it?

As a lifelong musician, I have always been most fascinated by Bach’s compositions. His pieces follow rigid rules of harmony, yet musicality and creativity never fails to shine through.

On a technical level, I hope to build on my abilities to work with libraries, implement supervised learning algorithms, and design user interfaces.

### 4. Features and Project Requirements

*If approved, the three features you outline in your proposal are binding; any changes to them must be approved by your project advisor. When describing each feature, try to be as specific as possible.*

**Feature #1:**

**In 2-3 sentences, please describe your feature.**

The first feature would involve processing the raw data of the 370 Bach chorales. This feature would be expected to take in notes and identify chords, and, depending on the depth of this implementation, could also be expected to identify non-harmonic tones and modulations, as well as cadences.

**In 1-2 sentences, please describe how you plan to implement your feature (e.g., is it going to be a class, a collection of methods, a single method, ...).**

Likely a collection of methods or a class.

**In 1-2 sentences, please describe how you plan to test your feature.**

Implement a toString method and take excerpts of Bach chorales as input.

**How would you best categorize your feature using the buckets paradigm? (choose one)**

☐ Standard

☐ Sprinkle

☒ Sparkle

**Explain in 1-2 sentences why you think it fits the chosen bucket.**

Implementing this feature would require processing raw data, as well as working with the libraries "music21" and "jmusic"

*Feature #2:*

**In 2-3 sentences, please describe your feature.**

Implement a n-gram algorithm using the data obtained from the first feature. The feature will generate a n-gram frequency table.

**In 1-2 sentences, please describe how you plan to implement your feature (e.g., is it going to be a class, a collection of methods, a single method, ...).**

Likely a collection of methods.

**In 1-2 sentences, please describe how you plan to test your feature.**

Sample outputs.

**How would you best categorize your feature using the buckets paradigm? (choose one)**

☐ Standard

☒ Sprinkle

☐ Sparkle

**Explain in 1-2 sentences why you think it fits the chosen bucket.**

This feature expands on the Text Generator assignment by having to not only account for chord movement but also chord length as well as key, therefore it is more complicated than just the text generator.

*Feature #3:*

**In 2-3 sentences, please describe your feature.**

User interface, involving an executable, a music player, and possibly a score generator.

**In 1-2 sentences, please describe how you plan to implement your feature (e.g., is it going to be a class, a collection of methods, a single method, ...).**

Collection of methods

**In 1-2 sentences, please describe how you plan to test your feature.**

Write out a sample chorale for it to display.

**How would you best categorize your feature using the buckets paradigm? (choose one)**

☐ Standard

☒ Sprinkle

☐ Sparkle

**Explain in 1-2 sentences why you think it fits the chosen bucket.**

Implementing this feature would require me to dive deeper into libraries like StdDraw and StdAudio.

*Other requirements:*

How will your project accept user input?

How will your project produce output?

Describe the .java files you plan to write. Describe the purpose and functionality of each .java file.

In 1 short paragraph describe what functionality you would add to your project if you could continue to work on the project for one extra month. (you won't have to implement any of this)

## 5. External Sources

*Answer the relevant questions if you plan to use any external resources. This section is not binding and is mainly for you and your project advisor to be informed about the kinds of sources you will be using (e.g., you can use additional sources, use different datasets or libraries, etc.) That said, if you want to make a major design shift (which likely would include changes to datasets/libraries/algorithms), it must be approved by your project preceptor.*

Which datasets (if any) you plan to use in your project (please include links).

<https://github.com/craigsapp/bach-370-chorales>

Describe which libraries (if any) you plan to use in your project (please include links).

music21

<https://web.mit.edu/music21/doc/index.html>

jmusic

<https://explodingart.com/jmusic/jmDocumentation/index.html>

StdDraw, StdAudio

Describe which algorithms (if any) you plan to use in your project (please include links or references).

N-Gram

List any other external sources (if any) you expect to use in your project (please include links or references).

## 6. Questions and Extra Contest

Describe any questions you have and would like to discuss with your project advisor during your 10-min project review meeting.

Some more detailed questions regarding implementation: are my current plans for each feasible, or is the scope too large.

If the scope is too large, how should I reduce the scope?

Describe any extra information about your project you would like to share with your project advisor before your 10-min project review meeting.

