

Cole Behrndt  
Daniel Wertz  
Matthew Mitchell  
Raleigh Hansen

## Proposal DoEarMi

### **Project Description**

The goal of our project is to develop a web application to assist users in practicing identifying scale degrees by ear. This could be limited to Major scale, or be expanded to include other commonly used scales, such as Natural/Harmonic Minor. We also aim to include practice sessions focusing on melodic dictation if our relatively short time frame allows it. Our system could provide the user with scale degree lessons, practice exercises, or tests/quizzes. While our project is similar to existing apps, we will make some tweaks to focus more closely on scale degrees, while keeping it easy and pleasant to use (see Relevant Systems section for more detail).

Our goal is a web app that can be easily translatable to mobile. We could either use a mobile first method to develop our web app so a user can login to the website on desktop or mobile, or we could use a framework that allows us to deploy to mobile apps and desktop at the same time using something like [Capacitor](#). Unfortunately, this might introduce too much overhead for a relatively new group of web developers.

### **Why the Problem is Important**

The ability to identify scale degrees by ear is a useful skill for any musician and a requirement for many music students. It can speed up the composition process, as well as help musicians apply inspiration from other musical sources. There are people who struggle to acquire this skill, which in some cases could lead them to giving up the pursuit of a musical education or not taking their musical abilities as far as they would like to. Providing a helpful and fun resource to both acquire the scale degree identification skill, as well as practice it, will enable users to learn and maintain this skill more easily.

### **Target Users**

Our target users are music students and anyone else who wishes to acquire or improve their ability to identify scale degrees by ear. Most likely that will include music students, beginner musicians, and music hobbyists. We also have the option of targeting educational institutions or professors with learning tools or courses that can be used to deliver lessons to students. This could also result in a more simplified option for elementary music education, where technology like iPads and chromebooks are becoming more commonplace.

## Relevant Systems

Earpeggio is a mobile app which provides users with musical ear training exercises including scale identification, chord identification, melody dictation, etc. It includes charts which allow users to track their accuracy progress through these exercises. Upon reading reviews, some users dislike that in addition to ear training, it requires users to have a high level of familiarity with a keyboard. This is not ideal for beginners (most of our target audience). Additionally, users complain about the piano and guitar sounds being “annoying” to listen to. To improve upon this, our project will keep the focus on ear training rather than keyboard training, and we can include a variety of soothing sounds to avoid repetitive listening.

Duolingo is a popular language learning app that urges users to do daily language learning lessons, quizzes and practice. This is similar to what we want to accomplish, but in a different field. The app allows users to access content within the app without an account but strongly urges users to sign up through notifications and access to more features. Once signed up a user can participate in weekly leaderboard challenges to compete against other users. When practicing, a user is shown a sentence, and a variety of options are shown that the user can tap on. If the user picks the correct set of words that make up the sentence, a sound plays and they get points towards their lesson progress. Duolingo is a good inspiration for notifications, rewards and gamification of learning and our project would like to implement some of those features.

Tonedear.com is one of the top google search results for many ear training related searches. They provide 8 different ear training exercises including Intervals, Chords, Scale Degrees, and Melodic Dictation. The site is easy to navigate and the exercises are fairly customizable. However, the site does not provide any direction on where to start or theory information, this could make it overwhelming for beginners. In addition to their website, Tonedear has a mobile app version with a price of \$4.99. Based on the reviews, it has nearly the exact same functionality as the website. There are complaints about the app not tracking user progress and not including any theory information. There are also several reviews claiming to have issues with the sound ranging from it being too quiet to not playing at all. Both the website and the mobile app only provide one piano sound for all exercises. For our project, we aim to provide more direction and theory information for beginner users and multiple sounds to choose from for exercises. Additionally, our project will be less overwhelming because it will focus solely on scale degree recognition and melodic dictation.

Functional Ear Trainer is one of the top results when searching “ear training” on the google play store. The app includes basic theory information and advice for practicing. The primary focus of this app is on scale degree recognition training. After each correct answer the app plays the notes stepping up or down the scale to the nearest Tonic. This is meant to help the user memorize the personality of each tone in the context of its key. They also include melodic dictation exercises, but nearly all of them require the user to pay \$9.99 to unlock. They only provide one piano sound to be used for all exercises unless you pay \$4.99 for additional instruments. Overall, this app is simple to use and well designed for beginners. The only

common complaint in the reviews is the relatively high price. Our project will improve on this by offering all the features Functional Ear Trainer offers, but completely free.

## Rough Completion Plan

| Milestones                               | Tasks                                     |
|--|---|
| Need Finding<br><br>Complete by Oct 14   | Survey Questions - Oct 7                  |
|  | Distribute Survey - Oct 10                |
|  | Interview - TBD                           |
|  | Analyze Survey/Interview results - Oct 14 |
| Prototyping<br><br>Complete by Oct 28    | Initial Prototype - Oct 18                |
|  | Collecting Feedback - Oct 21              |
|  | Revised Prototype - Oct 24                |
|  | Final Feedback/Revisions - Oct 28         |
| Implementation<br><br>Complete by Nov 22 | Subtask Dates TBD                         |
|  |   |
|  |   |
|  |   |
| Evaluation<br><br>Complete by Dec 2      | Subtask Dates TBD                         |
|  |   |
|  |   |
|  |   |