Comparison of Music Composing Software: Finale, GarageBand and Musescore

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Abstract: As a matter of fact, lots of software has been developed to realize music composing. With this in mind, based on the historical development of computer music and its current use, this article compares and analyzes the three composition software, Finale, Grageband and Musescore, after combining the data. It introduces in detail the general usage of Finale, Musescore and Grageband, as well as how to use these three-composition software to compose music. It details the differences between Grageband, Musescore, and Finale, and discusses how this three or two composition software can be combined to produce richer and more beautiful music. Then, it discusses how these three-composition software will be combined with AI in the future since AI is developing rapidly now. Then discussed how AI can be added to the built-in systems of these three software, allowing AI to generate a complete piece of music based on the basic melody or rhythm input by the user. Finally, based on the existing data and analysis, turns out that Musescore may be the best composition software now.

1 INTRODUCTION

Music composing software is a strongly useful tool that helps us create music and adjust our own perspective on it. In the era when computers were not yet widely developed, composers could only record their music with pen and paper, which usually took a long time to write a large piece of music. As the times developed, computers were invented, and the definition of computer music came into being. The term "computer music" refers to a variety of artistic endeavors made possible by the development of computer technology, from the direct creation of sound within the computer to the compilation of data for use in the composition of traditionally notated scores. The processes involved in switching from analog to digital working modes were going to have a significant impact on how the composers. The working environment for them has changed significantly as a result of these fundamental shifts in the nature of the underlying technologies (Peter, 2013) . The computer music creators don't expect to write entire scores in the blink of an eye, but rather to master the basic principles of creating such music (Pell, 2023). Moreover, the development of computer music can be roughly divided into three parts, I: Early Languages and the Rise of MUSIC-N, II: The Computer Age (Part II): Realtime Systems, III: The Computer Age (Part III): New Language Explorations (Nick & Julio, 2017). These composing programs, like Finale, Garageband, and Musescore, continue to be very influential today. Sheet music is written using Finale and Musescore, which correlate to the above scenario. Composing will be much more efficient by using these two programs, and the music can also be played by the software after it has been created. A computer notation application must not only address the complex rules set forth for modern notational practice, but also function in an advanced and user-friendly way. This need is met by Finale, which automatically translates musical notation, including durations, formatting, and beaming, with the option for user override. Finale views chords and notes as data representations of pitches that can be changed and transposed as needed (Purse, 2014). Grageband can produce more complex and gorgeous sounds. It can add multiple audio tracks. It is like a music studio but can be carried around. It can import songs written in Finale to add more desired effects on this basis. Multiple audio and MIDI tracks can be recorded, mixed, and edited simultaneously, and then saved as audio files in a number of different formats (Mayers & Lee, 2011). This article focuses on analyzing the main differences between Finale and Musescore, and whether it can be modified in the

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future by adding computer-generated music. Using studio software like GarageBand to compose richer music.

2 DESCRIPTIONS OF MUSIC COMPOSITION

The underlying logic of today's mainstream software-based compositions is generally the same: create a library to store the required sounds and instruments, etc., and then set some rules to allow users to input specified instructions to let the system generate the music, which can be random or specified. The emergence of more affordable and eventually more adaptable mainframe computer substitutes marked the end of the groundbreaking era of computer music, which was driven by the creation of the MUSICn family of programs. Leland Smith, who worked at Stanford University, made a significant advancement when he created a music-based syntax for specifying specifics of pitch and rhythm using MUSIC V and the SCORE subprogram. This is the prototype of the current method. The user provides the desired pitch and rhythm to the program, and lets the program decide how to process the input. This is very similar to the current method. Today's mainstream methods or languages, such as Nyquist or Super Collider, are also similar. Enter the instructions and set its parameters to the desired rhythm and pitch. The system will generate the desired music, even if it may not sound good, but the logic is similar. Another software, such as super collider, is not that easy to operate in practice. One of the most challenging aspects of using SuperCollider can be the actual composition process and choosing how one approach it. It might be challenging for someone to move from altering basic models to creating a large-scale work (Wilson et al., 2011). For example, to compose a piece of music of about two minutes, it usually needs one to three functions first to define the instruments to be used in the main function of the song. Then define the main function of the song and use the instructions in the manual to set the music that want to generate, such as beats, rhythm, and pitch. Finally, it also needs to organize a play or something similar to let the music sound, which takes a lot of time to write and debug. If want to be proficient in using these languages, it requires a lot of time to practice, so finding a more convenient method is the current goal, so that even people with no music or programming foundation can easily and conveniently use a special software or platform to make the music they want.

3 FINALE

One of the most important software on the market now is Finale. it has a simple and easy-to-use interface and is fully functional. one can operate it proficiently without much learning. it saves a lot of time for arranging music, especially when composing music with five-line notation. composers do not need to write down their ideas on paper, and can compose music anytime and anywhere. because ideas are not always available, sometimes when they are out and about, they may suddenly have a good idea at a certain moment, but they do not have paper and pen with them. at this time, the role of this software is highlighted. They only need a computer to write down their ideas. Like the other composing software, there will be 5 to 7 options at the top of its interface. As shown in Fig. 1.

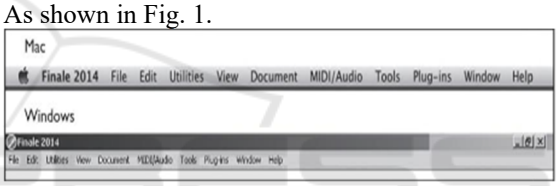

Figure 1: Snap shots of Finale (Photo/Picture credit: Original).

The first one is to create a new piece of music. After that, one can choose the score one want to create and the instrument. If it is a piano or violin, then a treble clef stave will be generated. If it is a viola, then a tenor clef stave will be generated. If it is written for an orchestra, then a full score will be generated. Each instrument has its own special clef, and so on. The software will adjust its own clef according to the actual instrument. Then, one can design how many bars one need. Even if it is not enough, when one enter the actual score writing, one can also insert the desired bars at the back of the score or in the middle of the score. The other options are all for adjusting the score, such as adding legato, opening files, and importing MIDI files or pre-recorded sounds. In general, all the functions that can think of can all achieved. One the functions that pretty useful is hide bars. For example, at the start of a piano vocal score when the voice is tacet for an introduction, hiding staves can be chosen for a limited range of systems. A dashed line will appear in the score for hidden strays. Once hidden staves have been chosen, they can be eliminated using the Staff menu's Show

Hidden Staves option. In this way, when some songs have a long period of empty beats at the beginning and the performer is waiting for other instruments, they can omit their own part and focus on the accompanist's score. This will allow the performer to focus more on their own part and turn the time the ensemble is waiting into preparing their own part. After finish the composition, if composer want to change something in the middle, but the work has already been imported, they can use the function set up layers. When there are two or more layers in a single measure, Finale already provides options for Layers 1 and 2 that regulate the orientation of the stems and ties. It is necessary to adjust the rest positions so that the default position better satisfies the musical expectations (Rudolph & Leonard, 2005). Finally, when there are no practical problems, composers can export it and enjoy the music they made. This software's primary purpose is to compose music. The benefit of being able to create computer-generated music is not present. The only difference is that musescore is simpler to use than it. The analysis of musescore is provided as following.

4 MUSESCORE

Musescore is also a powerful composition and arrangement software. Compared with finale, it is easier to operate and has a simple interface. Its interface guide is very simple, similar to finale. There are 8 main options at the top of its interface, each corresponding to a corresponding operation. If it is used for the first time, it will display a blank interface, showing that there is no new work. At this time, one can create a new project by using the file option at the top. The instruments can be customized for the track, etc. If the track is for two pianos or other instruments, it can also customize one part first, and that part no matter what, can be as many voices as it could be. The edit part looks like in Fig. 2.

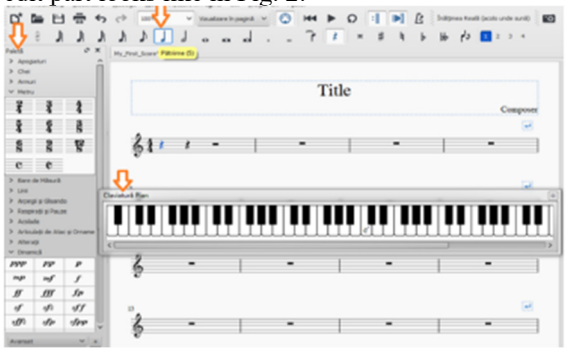

Figure 2: Snap shots of Musescore (Photo/Picture credit: Original).

The simple usage of this software makes it easy for music lovers who do not need much musical foundation to use it. Moreover, this software is completely free and all its functions can be used without purchasing additional means. It can also attract people who have no composing experience at all. If they want to get started with composing but do not have the right tools at hand, and because they have no foundation, they cannot start composing directly on the staff, then this software will come in handy. Apart from its software, MuseScore has an expanding online community with developers, translators, and fans who contribute to the project. Since then, a large number of open-source third-party plugins have been developed to increase MuseScore's capability (Watson, 2018). If beginners have any questions, they can go to its community to search or post questions, and there will be many enthusiastic professionals to help them. This software is mainly used in composition, and can even be used in the music enlightenment of preschool children, so that children can be exposed to music knowledge as early as possible and broaden their horizons. This software also covers many languages, so it can be used fluently even in countries with relatively small languages. Utilizing MureScore to integrate the musical and theoretical concepts. Over the course of six weeks, the MuseScore software was used to integrate previously learned concepts linked to music theory. The program was running version 2.0, which supports the selection of many languages (Todea, 2015). This composing software is generally not much different from finale. The most important thing is that it is free to download and can use all the functions. Its mainly use people is wider, that is, people who are not so professional composers. Grageband is very different from finale and musescore. It is more like a studio. The following is an analysis of Grageband.

5 GRAGEBAND

Grageband is a software similar to a music studio. It is exclusive to iOS clients. Users can download it through mobile phones, iPads, Macs and other devices. Unlike Finale and Musescore, it does not create music like notation software. It synthesizes sounds by users actively adding different tracks. There are about 11 options when users first enter its interface. Take the iPad version as an example. Users can swipe the screen left and right to choose what instrument they want to create. The normal order should be from piano to drums, synthesizers, strings, and users can also record the sounds they want, and

even import sounds from outside. For example, they can first write the music on the computer, and then import it into the iPad or mobile phone. In this way, producers can adapt the music they have written anytime, anywhere. Users can also download sounds shared by others through the sound resource library. There are also many sounds from famous producers. Users can create some sounds of their favourite producers by purchasing these sounds. Even if don't purchase any sound resources, one drummer, thirty Software Instrument sounds, and five hundred loops are all included in the free version of GarageBand. An extra 17 drummers, 150 software instrument sounds, and 1,500 loops are available as part of an optional one-time GarageBand in-app purchase (Plummer, 2015). This software, or music studio, is basically used to make music with an electronic style. The basic process is that the user first decides what a bass is, usually drums. In garageband, the user can choose whether to use real drums or electronic drum beats. After deciding on the base, the next step is to create the melody, which can be piano, vocal, strings, etc. The overall format should be A-B-A-C-A or something like that. On this basis, the user can choose to create some melody variations in C, change the style of the base in the repeated A, and decide in B what the melody and style of the climax of the work is. In short, if one creates 3 to 4 layers, it will be a pretty good piece of music. The basic work situation is shown in Fig. 3.

Figure 3: Snap shots of Grageband (Photo/Picture credit: Original).

Nevertheless, precisely because it is so easy to create, it also leads to another problem. According to some professional musicians, they're giving amateurs too much authority. This is comparable to the release of desktop publishing by Apple. For the following two years, every brochure and newsletter appeared like a ransom note since everyone was using all 22 fonts in every paper. Suring enough, there's a lot of polished, professionally produced, beautifully processed, dreck on the websites where individuals submit their GarageBand compositions (Pogue, 2005). So basically, this software is mainly used by people with some professional knowledge to create music. Of course, beginners can also use it, but they can't create music that is particularly perfect and following the rules of composition or music production.

6 LIMITATIONS AND PROSPECTS

Based on the above analysis of the three-music software, it can be seen that the current mainstream music software does not have automatic music generation or similar functions. In Finale and Musescore, this two software, as notation software, can only do basic input through users, and they use their own built-in players to play the sounds that users come up with. In GarageBand, users can enrich the sounds they create by downloading other people's sound resources, but this is not a unique sound created by the user. Based on the current technological development, in the future, similar self-generated built-in codes or functions can be imported into notation software, allowing the notation software to recognize the user's input melody and generate a complete work based on this melody or motive. It also needs to follow the most basic music theory and cannot make any mistakes. Users can also adjust in the system settings what type of music they want it to generate, such as classical, romantic, or even modern. A data transmission function can be added to musescore or garageband. Users can provide feedback based on the generated music and return it to the software company's superiors to see if it meets the user's requirements. In this way, the superiors can use the user's feedback to improve the software's built-in music generation model, so that the software can better generate the sound that the user wants. As a paid software, Finale can attract more users to use this software by introducing a community-like communication website. These are just assumptions. The status of composition and the idea of human unique music are irreplaceable.

7 CONCLUSIONS

To sum up, the comparisons in the study show that, in terms of notation software, if users are a non-professional user, Musescore is definitely the best choice. Finale is more oriented towards professional composers or musicians, and Garageband is

equivalent to an integration. Users can first write the music they want to create in Musescore or Finale, and then import it into Garageband to enrich the sound and other operations. The study shows that Musescore is the easiest notation software to use. It is free and fully functional. It can do almost all the functions of Finale. However, if users want more professional use and long-term use of notation software, Finale may be a better choice. As mentioned in limitation, if this notation software can be added with self-generated functions in the future, it may open up some ideas for composers, provide some musical tastes, and help compose more smoothly. The core purpose of this article is to compare the three-composition software to see which one wins and which loses. Finally, it is concluded that in terms of notation, Musescore may be the best choice for most people.

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