

GROOVECELL - MUSIC LEARNING FOR BASS AND DRUMS

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EXTENDED ABSTRACT

The interaction of instruments in the rhythm section such as bass and drums contributes significantly to the quality of music ensemble performance [2]. Especially short, recurring rhythmic and melodic patterns (so-called grooves) played together on both instruments form the rhythmic and harmonic foundation of musical pieces in genres such as pop, rock, funk, and Latin-American music styles such as bossa nova or mambo [4]. This makes a groove an essential building block (cell) on which harmony and melody instruments can build upon. Despite the importance of the interaction of the two instruments, this aspect is rarely addressed in instructional music literature. Commercial music learning apps and platforms such as Songs2See, MusicCritic, Yousician, Songstar, and Skoove¹ mainly focus on learning single instruments without paying attention on their interaction within a music ensemble. The use of technology, i. e., software, apps and devices such as smartphones and laptops, has become an important part of the practice routine of today's musicians [3].

The GrooveCell project aims to create a large database of grooves covering various music styles. Learning music is often compared to learning a language. By learning new grooves, bass players and drummers can constantly expand their musical vocabulary and thus better express themselves musically. For each groove, two possible variations are provided to the musicians to illustrate some possibilities for rhythmic and melodic variations. After starting in a slower tempo, the musician can gradually increase the tempo towards the "target tempo". Each groove includes both a score and tablature notation for bass and drums. In addition, the underlying musical characteristics such as the meter, characteristic sub-patterns, syncopations, scales and the applied playing techniques (like hammer-on, pull-off, staccato etc.) will be explained in detail to enhance the learning experience. We avoid any copyright issues by publishing solely self-composed grooves "in-the-style-of" particular music styles.

From June to August 2019, a user study was conducted using an online questionnaire of multiple choice questions. The main goals were to understand the general demand of a music learning platform with special focus on interaction of drums and bass as well as the potential target audience. 72 musicians (69 male, 3 female) including 36 bass players, 27 drummers, and 10 participants playing other instrument participated. The participant's ages ranged from 20 to 58 years ($M=35.5$, $SD=9.2$). Participants reported the use of various software products for music learning including IReal Pro, Guitar Pro, Ultimate Guitar, Band Minus One, Transcribe!, anytune² as well as the previously mentioned Songsterr, Yousician, and Songs2See. These products are mostly used as software on a PC / Mac (25%) but also as a smartphone app (15.3%), app on a tablet computer (13.9%), or online as part of a website (16.7%).

On a five-point scale from beginner (1) to professional (5), participants assessed their playing skill on average with 3.6. Most participants can read both score (75 %) and tablature notation (70.8 %). The participants feel comfortable in the music styles Pop & Rock (86.1 %), Blues (50%), Funk (48.6 %), Progressive Rock (38.8 %), Jazz & Fusion, Metal (both 33.3 %), Folk, Classical (both 20.8 %), Latin (11.1 %), and Drum'n'Bass (5.5 %). When asked about their musical goals³ the participants stated they would like to improve their time feel ($M=4.0$) and interaction with their rhythm section partner ($M=4.3$), learn to better recognize and play in

¹<https://www.songs2see.com>, <https://musiccritic.upf.edu/>, <https://yousician.com>, <https://www.songsterr.com>, <https://www.skoove.com>

²<https://irealpro.com/>, <https://www.guitar-pro.com>, <https://www.ultimate-guitar.com/>, <http://1manband.nl>, <https://www.seventhstring.com>, <https://de.anytune.us/>

³Questions based on a five-point scale ranging from "Not Important" (1), "Maybe" (3), and "Absolutely" (5). For each question, the mean (M) over all participants is reported.



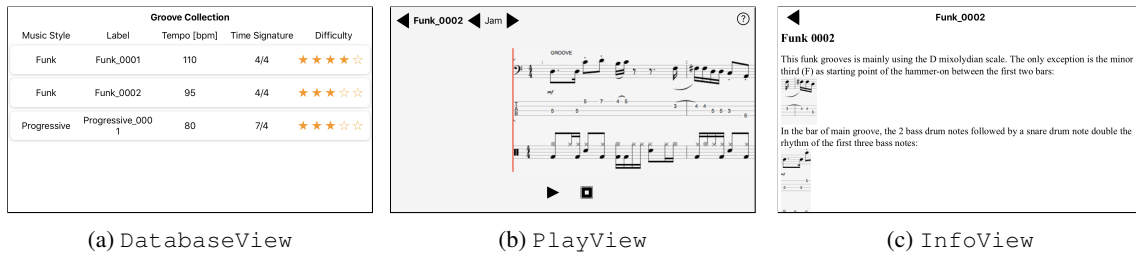


Figure 1: Three views in the iOS app prototype.

complex/less common time signatures ($M=3.9$), as well as to expand their vocabulary and learn new grooves from different music styles ($M=4.5$). These statements are very encouraging for further development of the GrooveCell project. More results of the user study will be published on the project website [1] and presented on-site during the late breaking demo session.

At the moment, a project website [1] informs about the overall progress. Also, a minimalistic iOS app was developed to demonstrate the main music learning concepts. Figure 1 shows three views in the iOS app prototype. Available grooves are listed with according metadata in the DatabaseView. Simple playing and browsing functionalities as well as a score animation are implemented in the PlayView. Finally, additional musical information for a groove are shown in the InfoView.

In addition to releasing the app, we plan to publish a subset of new grooves for free. In the future, the GrooveCell platform opens up interesting MIR related research questions:

- How can automatic music composition approaches be used to generate style-specific grooves consisting of bass lines and drum patterns?
- Can such a system be trained to create “musically authentic” variations to simulate a jam scenario, where a drummer or bass player can jam and his/her digital counterpart reacts like a real musician?
- Given a large database of grooves of different difficulty levels, how to generate recommendations like in a study plan, which is customized to the current music skill level of the user?

REFERENCES

- [1] Groovecell - project website - <http://www.groovecell.de>.
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- [3] George Waddell and Aaron Williamon. Technology Use and Attitudes in Music Learning. *Frontiers in ICT*, 6(May):1–14, 2019.
- [4] Paul Westwood. *Bass Bible: Das ultimative Know-How für Bassisten*. AMA, 1997.