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Mobile Way to Music Analysis: Learning Fundamentals Digitally

ABSTRACT

Background

Computer programs on music theory and music analysis have intensively developed in the early 21st century. In the last decade wide invasion of new touchscreen devices created new opportunities for the study of music analysis in its basic components. The main achievement of touchscreen for musicians consists in possibility to feel music kinesthetically while playing it directly on the screen. Modern tablets and smartphones while became a widespread create new conditions in active learning new music timbres, rhythmic models, and visualization of music tones and chords.

Nowadays a great variety of mobile applications (first of all on the iOS and Android platforms) has been still remaining methodologically unknown to the most musicologists and music teachers. The core of this problem is not only in their computer competence but also in the initial orientation of many of such applications to the very basic music level or to simple music game with DJ accentuation. Meanwhile, there are several groups of mobile applications among them which may be greatly useful for professional study of music theory and analysis. Now we can detect several levels of such mobile applications: from the basic ones devoting to the elementary music training such as intervals and chords recognition, to the more advanced applications which deal with music perception of non-major and minor modes, ethnic timbres, and rhythms.

Aims and repertoire studied

The main purpose of the proposed paper is to demonstrate the most innovative features of such 'iTheory' applications, to disclose the main tendencies in this process and to show how to use them in musicological aspects. Methodological recommendations will be done for the professional music education of different levels.

All the newest 'iTheory' applications may be classified under two types.

I. The first type considered in connection with the academic purposes may be called 'music materials'. There are four main application groups as follows:

1) For common music study needs: quiz games (testing knowledge in music compositions) and play-sheets music applications for sight reading (like 'Music Sight Reading' which contains MIDI melodies of different level of difficulty supplied with visualized meter models);

2) For more detailed acquisition of music fundamentals (sight reading, ear training, music dictation, and listening exercises in intervals, chords, scales). One can mention 'My Ear Trainer' (with exercises on recognition of intervals, chords, and their progressions), 'Scales Tutor', and 'Rhythm Teacher' (with

rhythmic models in one and two voices for copying). Among them 'Chords' seems to be more advanced one, it may be used to recognize non-tertian chords with added tones.

The common minus of above mentioned applications of the first and second type consists in their anti-musical mechanistic spirit: timbre of MIDI sound is far from realistic instrumental sound and the absence of music nuances in performing style of MIDI playback makes them unattractive for professional musician's ear;

3) For playing music kinesthetically by means of application-simulators of music instruments (in symphonic as well as in folk style). Contemporary applications on both the iOS and the Android systems have realistic sound of its timbre. So, they may be more interesting for professional musicians. Moreover, they have possibilities to play on such an instrument just while touching the screen keys or strings;

4) For applications aimed at study of ethnic traditional music (its modes and rhythmic models). Among them there are several Chinese, Turkish and Indian applications which play the leading role in this process.

The third and the fourth groups of application may be considered as especially interesting for learning music theory. They may serve a good starting point for the 20th century music study with complicated rhythmic models and chromatic modal scales (including non-tempered ones). Most of such applications have offline versions free to download (mainly Android based ones).

Methods

To disclose their potentialities in detail with some examples let us mark the three types of applications which are effective for modal and rhythmic study.

1. Modal scales are represented in soundless variant. In 'Bouzouki Scales' based on Greek folk music modal scales with their tonics are shown in such a way. It is good for sight singing.

2. Visual informational blocks with modal scales may be combined with their MIDI playback ('Music Scales'). Often having been named exotically, these scales contain variants of usual modes: pentatonic (non-hemitonic and hemitonic), mixed diatonic modes, symmetrical modes etc. Such are Korean 'Gugak' and Chinese Guzheng from 'Chinese Band', 'Blues scale' (for study blues mode like: c – es – f – ges – g – b – c).

Some ethnic applications have microchromatic component in its sound content. Ethnic synthesizer 'R-ORG (Turk-Arabic Keyboard)' has the second-semi-low degree which is typical for music of Iran and Turkey. Microchromatic intervals can be founded also in 'Santoor' (with mugham modal scales) and 'Santoor Musical Instrument' (with Indian modes).

Generally speaking, a large group of Indian applications aimed at raga study may be marked out in this modal context. 'Carnatic Raga' contains more than 950 variants of Indian

modes with different combinations. 'Swaras' is the most convenient for academic musicological purposes. This application generates Carnatic (South Indian) music phrases for different ragas (scales). Each tune is randomly generated, based on existing compositions and traditional phrases in that raga. Unique phrases which closely follow the character of the raga are generated using a predictive pattern matching algorithm. As a result, musician can choose the length of phrase, to repeat it by memory under the bourdon accompaniment in the tanpura timbre. I may be good material for music memory training and strong feeling of modal tonic.

In rhythmic field there are also two variants of approach among the applications. One of them includes mobile applications targeting at learning rhythmic models graphically demonstrating music beats ('Shadjam Carnatic Kit' and 'Turkish Music Rhythms' are especially interesting in this aspect). The second variant consists of simulators of percussion instruments (various drums from academic to ethnic models). Each of them may be used for learning rhythmic models by tapping on them on the screen.

II. The second type, 'applications-facilitators' may be divided into three groups:

1) Play-sheets music applications (facilitating sight reading), like 'Muse Score' which allows to listen to the sheet music, select parts of it to be displayed or to be played;

2) Speed changers of audio and video playback. The most important thing is that one can change music tempo without affecting the pitch. It gives possibilities to analyse and write down music fragments by ear as a music dictation (making music playback slower). Among them are 'Music Speed Changer' (which allows to change the speed of audio files on the device in real time, or change the pitch without changing the speed);

3) Fragment repeaters producing different types of repeating music fragments. As a rule, such applications as 'AB Repeat Player', 'Audipo', 'Star Player', 'Smart Repeat' can repeat user defined part of audio or between A and B points. The most functional is 'Amazing Slow Downer Lite'. It can repeat any section of the music at full speed, slow it down or even speed it up by changing the speed between 25% of original speed and 200% (double speed) without changing the pitch.

All of applications of this type may be of substantive use for making analysis of difficult music intonation and harmony as well as for notation decoding the speech melodic line in verbal languages.

Implications

In that way, professional adaptation of 'iTheory' mobile applications to academic study may improve skills in music listening, stimulate an interest for improvisation on virtual instruments (including exotic ones). The most part of such applications is free or low-costed, so they are widely affordable for student's freestanding training. Professionally, ethnic musical applications may help to prepare musicians to study new components of music language doing it easier to learn than modern music (with its complicated chords, modal scales, and rhythms). Psychologically, to the cultural part, such style of music theory education can contribute to raising feeling of

social tolerance through student's experience in sound world of other nationalities.

Keywords

Computer music, musical cognition, musical pedagogy, musical perception.

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