CHORDIFY: CHORD TRANSCRIPTION FOR THE MASSES

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ABSTRACT

Chordify is a new web-based music player that strives to help people play a song on a (harmony based) musical instrument. Our web-service automatically transcribes the chord labels from an arbitrary audio source, and presents the chords to the user in an intuitive manner. Next, the chords are used as an interface to the music: during playback, a cursor highlights the currently played chord, and users can select the chords in the sequence to play or loop any fragment of the audio source. Chordify has been built on existing Music Information Retrieval (MIR) technology, and aims at making this technology available to a less technically oriented audience. Our service is still work-in-progress, and feedback is much appreciated.

1. INTERFACE

Previous research indicates that increasingly many music students mainly use on-line streaming services like SoundCloud or YouTube to practice songs they would like to play [5]. Hence, a user can upload a personal audio file to Chordify, but also point to a YouTube or SoundCloud source. The Chordify interface is designed to be appealing and simple: everyone who can hold a musical instrument should be able to use it.

If you visit the Chordify [1] webpage, you will be prompted with the dialogue displayed in Figure 1. This dialogue allows you to do two things: upload a music file from your local computer, or paste a URL from YouTube [2] or SoundCloud [3]. Chordify will then automatically transcribe the chords from the supplied audio source and display them to the user (see Figure 2 for an example). The chord interface is designed to be intuitive, but we assume that the user can read chord labels. Every beat is represented by a square, and chord changes are denoted with chord labels. When the song is played, a cursor highlights the current beat position, telling the user which chord to play at that position in the piece. If YouTube is used as audio source, the video is played simultaneously.

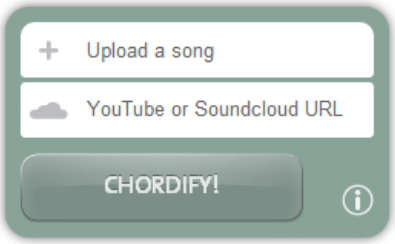

Figure 1. Musical source submission dialogue at the Chordify homepage.

Users can navigate through the song by clicking any of the squares. The music player will jump to the clicked position in the song, and start or continue playback from that beat on. Similarly, a user can select a sequence of chords, and this selection will loop until the ignore loop button (the lemniscate next to the playback controls) is clicked. Next to the mouse, a keyboard can also be used to control playback: hitting the spacebar will start or stop playback, and the arrow keys can be used to move the cursor.

It is easy to share a *choridified* track with other users: just copy the URL in the address bar, and provide it to someone else. Personal music files cannot be shared with other users, and are locked to the browser session of the uploader. Hence, Chordify cannot be used to redistribute music other than through streaming services like YouTube and SoundCloud.

2. TECHNOLOGY

The aim of Chordify is to make state-of-the-art music technology accessible to a broader audience. Behind the scenes, we use the VAMP-plugin [4] architecture and the sonic annotator [5] for extraction of the downbeat positions and chroma features. Next, the Haskell program HarmTrace [1, 3] takes these features, and computes the chords and the key of the piece. HarmTrace uses a model of Western tonal harmony to aid in the chord selection [2, 4]. At

[1] http://chordify.net
[2] http://youtube.com
[3] http://soundcloud.com

[4] http://www.vamp-plugins.org/
[5] http://omras2.org/SonicAnnotator

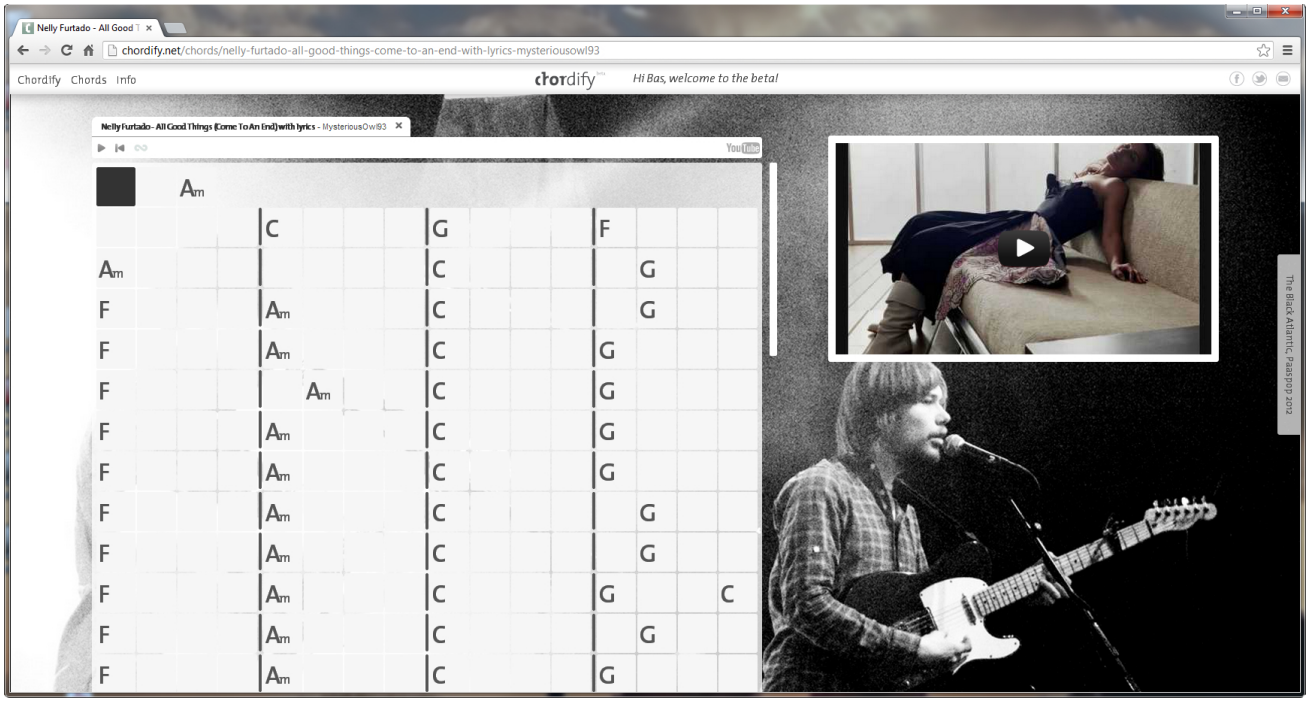

Figure 2. A screenshot of the Chordify interface displaying the chords and YouTube video of the song *All Good Things (Come To An End)* by Nelly Furtado. The chord sequence is displayed on the left side, and the video on the right side of the page. Within the chord sequence, the squares represent beat positions, the black bars are bar lines, and chord labels denote chord changes. The dark square is the cursor, highlighting the playback position within the song.

beat positions where the audio matches a particular chord well, that chord is selected for the final transcription. However, in case there is more uncertainty about the sounding chord at a specific position in the song, the HarmTrace harmony model will select a chord based on how well it fits the rules of tonal harmony. HarmTrace furthermore assumes that chords are more likely to change at strong rather than weak metrical positions.

Chordify fosters open-source software. Not only do we use open-source software packages like GHC, PHP, SoX, sonic annotator, and MongoDB, but we also give back a large share of the in-house developed technology to the MIR research community via open-source software projects like HarmTrace [6] and scientific publications describing some of the technology behind Chordify.

3. FINAL REMARKS

Chordify is being actively developed, and we have recently entered an open beta testing phase. We will add new features depending on user requests and feedback; for instance, some users have requested that guitar chord diagrams to be displayed. We will keep improving the user interface as well as the chord extraction technology, and we also hope to develop our own feature extraction front-end in the near future. In the mean time, we invite everyone to visit `http://chordify.net`, request a beta account, and give Chordify a try.

[6] `http://hackage.haskell.org/package/HarmTrace`

4. ACKNOWLEDGEMENTS

Chordify could not have been realised without the support of Utrecht University.

5. REFERENCES

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