

November 15, 2012

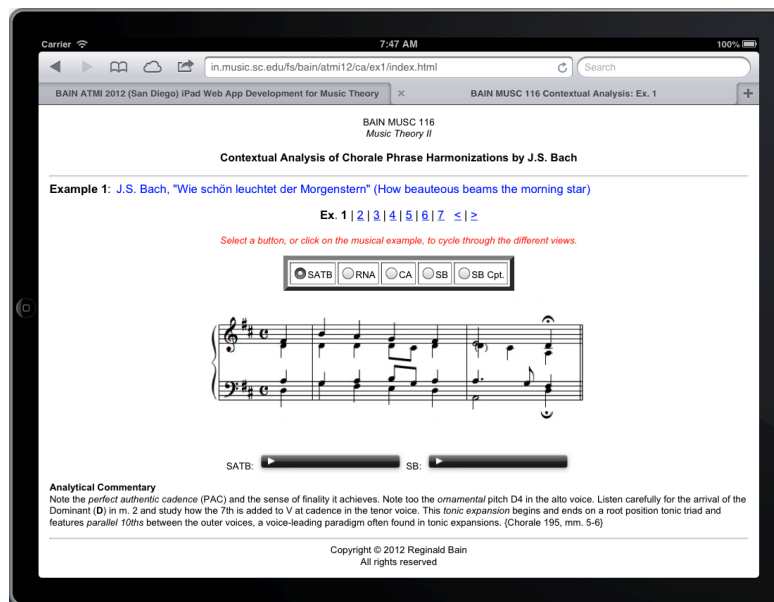
iPad Web App Development for Music Theory

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Abstract

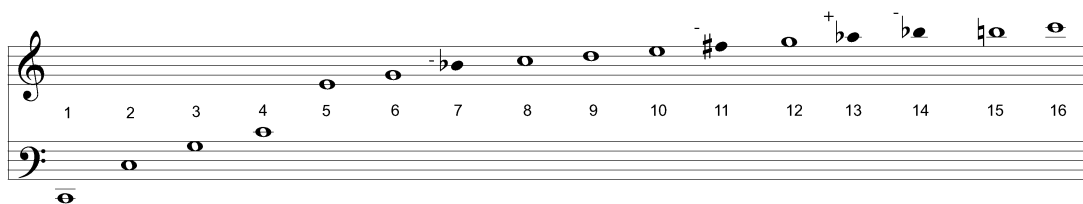
Multi-Touch technology has transformed the way we want to interact with applications. This paper will discuss techniques and strategies for taking existing Web-based applications for undergraduate music theory and adapting them to take advantage of the iPad's built-in hardware features. The iPad's multi-touch interface, multimedia capabilities, and larger screen are just some of the features that make it an ideal platform for such applications. Rather than building iPad (iPhone) apps using application programming interfaces (APIs) like Objective-C or Cocoa Touch, which have rather steep learning curves, educators may develop compelling instructional content using the Web standards HTML5, CSS3, and JavaScript which are comparatively easier to learn, maintain, and enhance over time. A web site for this presentation is available at:

in.music.sc.edu/fs/bain/atmi12/

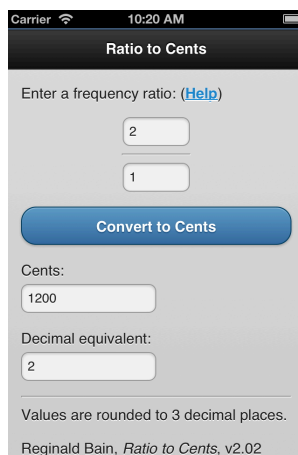
The image shows a screenshot of an iPad displaying a web application. The browser's address bar shows the URL 'in.music.sc.edu/fs/bain/atmi12/ca/ext1/index.html'. The page title is 'BAIN MUSC 116 Music Theory II'. The main heading is 'Contextual Analysis of Chorale Phrase Harmonizations by J.S. Bach'. Below this, it says 'Example 1: J.S. Bach, "Wie schön leuchtet der Morgenstern" (How beauteous beams the morning star)'. There is a sequence of Roman numerals: 'Ex. 1 | 2 | 3 | 4 | 5 | 6 | 7 | < | >'. A red instruction reads: 'Select a button, or click on the musical example, to cycle through the different views.' Below this are five radio buttons: 'SATB' (selected), 'RNA', 'CA', 'SB', and 'SB Cpt.'. A musical score for SATB is displayed below the buttons. At the bottom, there are two sliders labeled 'SATB:' and 'SB:'. Below the sliders is an 'Analytical Commentary' section with text: 'Note the perfect authentic cadence (PAC) and the sense of finality it achieves. Note too the ornamental pitch D4 in the alto voice. Listen carefully for the arrival of the Dominant (D) in m. 2 and study how the 7th is added to V at cadence in the tenor voice. This tonic expansion begins and ends on a root position tonic triad and features parallel 10ths between the outer voices, a voice-leading paradigm often found in tonic expansions. (Chorale 195, mm. 5-6)'. At the very bottom, it says 'Copyright © 2012 Reginald Bain All rights reserved'.

Example 1. *Contextual Analysis of Chorale Phrase Harmonizations by J.S. Bach*
Web app demo for iPad

Built with HTML5, CSS3, JavaScript & jQuery, this iPad app allows MUSC 116 *Music Theory II* students to interactively explore the signs/sounds of Roman numeral analysis, contextual analysis, and two-voice counterpoint analysis in the context of a chorale phrase harmonization by J.S. Bach.



$$\text{Pitch interval in cents} = 1200 \log_2 \left(\frac{f_2}{f_1} \right)$$



Example 2. *Ratio to Cents* Web app demo for iPhone

Built with jQuery Mobile, this mobile Web app for iPhone/iPod Touch allows students to calculate the number of cents in any pitch interval derived from the harmonic series.

Selected Bibliography

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Selected Links

- jQuery - <http://jquery.com>
- jQuery Mobile - <http://jquerymobile.com>
- Matt Bryson, TouchSwipe - <https://github.com/mattbryson/TouchSwipe-Jquery-Plugin>