

Legal Analysis

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Project: Guitutar
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Assignment Evaluation:

Item	Score (0-5)	Weight	Points	Notes
Assignment-Specific Items				
Regulatory Analysis	4.5	x3	13.5	Need more details on app process
Analysis of Patent 1	4.5	x3	13.5	See comments
Analysis of Patent 2	5	x3	15	
Analysis of Patent 3	5	x3	15	
Writing-Specific Items				
Spelling and Grammar	5	x2	10	
Formatting and Citations	4	x1	4	Indent in 3.0
Figures and Graphs	5	x2	10	
Technical Writing Style	4	x3	12	Put in patent numbers
Total Score	93/100			

5: Excellent 4: Good 3: Acceptable 2: Poor 1: Very Poor 0: Not attempted

Comments:

You have some excellent patent analysis, but the application process for product certification seems pretty inconsequential by your description.

1.0 Regulatory Analysis

For Guitutar to be allowed into the commercial market, certain regulatory certifications are required. Depending on the governing body to the market, different certifications may be required. However, regulatory testing for the safety of products is done globally through Underwriters Laboratory (UL). Being that Guitutar's design includes exposed metals that are connected to low currents with the intention of being in contact with users, having a safety certification is not only required but also helpful to protect against any liability claims. There is safety protocol put into place in the Guitutar's design already, however the third-party certification will do greatly to ensure the product is marketable. The "Safety Certification" through UL applies to consumer electronics and uses standards from issued from UL, The International Electrotechnical Commission, and accepted Global Standards [1].

Any digital technology entering the United States market must be certified by the Federal Communications Commission (FCC). The FCC "regulates interstate and international communications by radio, television, wire, satellite and cable in all 50 states, the District of Columbia and U.S. territories" [2]. Although Guitutar's communication is limited to internal wires and Bluetooth connectivity, any digital system has the potential to interfere with radio communication or generate radio noise [3].

We will submit applications of certification from UL and the FCC. The UL certification first requires a quote from them, then shipment of a sample product is given to UL for testing purposes. After testing has been done, a UL project engineer will inform us on the outcome of our certification [7]. For the FCC certification, we must first register with the FCC to receive a FCC Registration Number. When ready for testing, we then select the lab where we would like our product to be tested and hand over a "production-ready" prototype. After FCC completes their tests, we will hear back if we are certified and then subsequently filed within the FCC [8]. After verification that Guitutar is not a danger to its users or the United States communication structure, we will be allowed to enter the market.

2.0 Legal Liability Analysis

2.1 Analysis of Patent 1: Musical Instrument Fingering Extraction and Training - U.S. Patent 1 248 512

This patent was filed 12-Oct-2005 by Carloz Diaz. It covers the concept of an input system that takes in a microphone signal and through digital signal processing produces a fingering representation of the music. The guitar then lights up LEDs along the neck of the guitar instructing the user how to reproduce the music at a selected tempo. The primary claims which potential infringement exists are the following [4]:

- a fingering display for a positioning proximate to a particular musical instrument such that a user can be guided in playing said tune on it
- a fingering display processor for converting said electronic representations of fingering patterns in real-time according to user controls of tempo and tune selection
- the fingering display is integrated into the fretboard and under the strings of an acoustic guitar

Guitutar will also have a fingering display integrated into the fretboard and under the strings of a guitar to instruct users how to play a song. This is very similar to the claims in the patent, yet there are significant differences. The patent in question specifies LEDs being modular with suitability for temporary installation [4]. Guitutar however is designed to be a complete replacement of the guitar neck in which it is a permanent system. For each case, substantially different approaches must be taken to get the result, which sufficiently distinguishes the two. For the ability to instruct users how to play using LEDs and a system to allow for processing of tempo of a song, both do not fall under the category of “non-obvious”. More so, the use of LEDs to guide users of what to do, whether it be pressing buttons or playing instruments, has been used for decades. There is nothing novel about the use of LEDs as instructions. Also all digital systems that play music *must* have the ability to process the tempo of the song. Without this feature the identity of the music is lost. It would be impossible to have any electronic music device without this feature therefore it is not a liability issue for us. This is proven by the endless number of musical systems that can alter the tempo of a song and similarly training mechanisms that use lights to guide users where to go and or do.

2.2 Analysis of Patent 2: Musical Instruction System - U.S. Patent 8 629 342

This patent was filed 07-May-2010 by Harold Lee and Roger B. Dannenburg. It covers the concept of a system in which a user can select a piece of music where the system would then provide cues as to how to play the piece of music in real time. The system would detect the performance of the user and provide feedback in real time. The primary claims in which potential infringement exists are the following [5]:

- providing performance cues to a user to perform musical events on a musical instrument, wherein the performance cues are synchronized to expert performance data of the musical piece
- determining an extent to which the user-performed musical events have been correctly or incorrectly performed
- receive a user selection of a musical piece

Performance cues will also be used within Guitutar; however, this patent specifies that the cues are to be representative of a human hand. Guitutar provides cues solely as lights near string and fret intersections in which the user should “press here”. There is no aid in how the hand should be presented to accomplish the task. There will also be scoring of the user’s accuracy in both. The patent will be using audio processing to determine if the frequencies it is picking up with a microphone match that of what should be played. This is vastly different than Guitutar’s implementation that allows for different tunings of a guitar due to notes are detected on connection with a string and a fret. Finally, the selection of a musical piece being shared between both designs is hardly unique and thus falls under the fact that it is obvious to the outside world.

2.3 Analysis of Patent 3: Instructional systems and methods for musical instruments - U.S. Patent 6 191 348

This patent was filed 13-Sep-1999 by Steven T. Johnson. It covers the concept of an array of graphic note elements indicating where players should place their fingers on a guitar. The display is integrated into the neck of the guitar to not interfere with the ability for users to shape their hands into the correct formation to play the guitar. The primary claims in which potential infringement exists are the following [6]:

- a plurality of display segments arranged in an instruction grid such that each display segment corresponds to a unique location on the playing surface
- a control circuit for operating the display segments based on note data such that the display segments communicate note instructions that indicate where the string members are to be brought into contact with the neck assembly to form musical notes
- finger sensing means for generating feedback data identifying the locations on the playing surface at which the string members are brought into contact with the neck assembly

The patent specifies that a number of display segments will be present each indicating a unique location of where to press the guitar neck. Due to the nature of the guitar neck already having unique locations which are visibly displayed, this is the purest nature of a guitar neck which constitutes it as obvious design. The patent has finger sensing means in order to identify where the string has become in contact with the guitar neck. Guitutar has a similar feature but with the direct opposite implementation. The Guitutar design instead senses a connection of metal between the string and the fret along the guitar neck which allows for identification of where the user placed their finger. There is no similarity in the two designs besides that they serve the same purpose.

3.0 Sources Cited:

- [1] UL LLC. (2017). *Safety Certification* [Online]. Available: <http://services.ul.com/service/safety-certification/>
- [2] Federal Communications Commission. (2017). *What We Do* [Online]. Available: <https://www.fcc.gov/about-fcc/what-we-do>
- [3] Federal Communications Commission. (1993). *Understanding the FCC Regulations For Computers and Other Digital Devices* [Online Document]. Available: <https://transition.fcc.gov/bureaus/oet/info/documents/bulletins/oet62/oet62rev.pdf>
- [4] Carlos Diaz, "Musical instrument fingering extraction and training", U.S. Patent 1 248 512, October 12, 2005.
- [5] Harold Lee, Roger B. Dannenberg, "Musical instruction system," U.S. Patent 8 629 342, May 07, 2010.
- [6] Steven T. Johnson, "Instructional systems and methods for musical instruments," U.S. Patent 6 191 348, September 13, 1999.
- [7] UL LLC. (2017). *Project Submittal Process FAQ* [Online]. Available: <http://www.ul.com/customer-resources/faq/product-submittal-process-faq/>
- [8] MET Laboratories, Inc. (2017). *6 Steps to Successful FC Testing & Certification of Electrical Products* [Online]. Available: <http://www.ul.com/customer-resources/faq/product-submittal-process-faq/>