Legal Analysis

Year: 2019 Semester: Fall Team: 10 Project: Gesture Controlled Smart Home

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Assignment Evaluation:

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| --- | --- | --- | --- | --- |
| **Item** | **Score (0-5)** | **Weight** | **Points** | **Notes** |
| **Assignment-Specific Items** | | | | |
| **Regulatory Analysis** | 4.5 | x3 | 13.5 |  |
| **Analysis of Patent 1** | 4 | x3 | 12 |  |
| **Analysis of Patent 2** | 4 | x3 | 12 |  |
| **Analysis of Patent 3** | 4 | x3 | 12 |  |
| **Writing-Specific Items** | | | | |
| **Spelling and Grammar** | 4.5 | x2 | 9 |  |
| **Formatting and Citations** | 4.5 | x1 | 4.5 |  |
| **Figures and Graphs** | 5 | x2 | 10 |  |
| **Technical Writing Style** | 5 | x3 | 15 |  |
| **Total Score** | 88 | | |  |

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

Comments:

*Comments from the grader will be inserted here.*

In line comments.

1.0 Regulatory Analysis

Federal Communications Commission (FCC) [1]

All electronic wireless device including WiFi, Bluetooth, and etc. requires FCC certification before it is sold in the market, and our Gesture Controlled Smart Home has no exception because we used WiFi connection in our design. Therefore, it is necessary to register with the FCC and get the formal FCC equipment authorization.

There are 6 steps to obtain FCC certification.

1. Select Radio Frequency and Design Equipment: Consider about radio range, propagation,size, power consumption, and optimization
2. Test During Development: Perform as many tests as the product is being developed
3. Register with FCC: Provide your business address and contact information to FCC’s CORES page and you will pay nominal fees to get an FRN and to have the ability to request a mandatory grantee code.
4. Select Test Lab: After getting FRN and grantee code, you can contact an FCC-registered testing facility.
5. Compliance Test: Provide the product’s technical specifications to your lab partner in order to test a prototype that is ready to produce.
6. Certification and Filling: TCB will send you a Grant of Equipment Authorization if you successfully passed the test. The authorization allows you to legally sell your product in the United States.

Smart Home Testing and Certification[2]

Smart Home Testing and Certification is offered by TUV Rheinland. This certificate is about smart home product and function testing, protected privacy for the smart home, and the smart home user-friendliness.

There are 6 steps to obtain this smart home certification.

1. Detailed test inquiry
2. Individual quote
3. Testing and certification order
4. performance of testing
5. Test report with certificate and test mark
6. Entry in Certipedia certification database

2.0 Legal Liability Analysis

2.1 Analysis of Patent 1, United States Patent Application 20170123502 A1

Patent Title: Wearable Gesture Control Device and Method for Smart Home System

Patent Holders: Yi Wang, Yekun Gao, Xiaoguang Zhao, and Rongbao Nie

Patent Filing Date: May 4, 2017

This present invention relates to a device that detects user gesture by sensing the wrist movement, and translates the movement into commands to control smart home devices. This device is a wearable device for user to put on their wrist. [3]

Our project is similar in a way that we also detect gestures as inputs and carry out corresponding commands wirelessly. However the difference between theirs and ours is that they detect gesture by sensing the movement of the user’s wrist motion instead of sensing the waving gesture of the user. Our project focuses on user portability so we do not need to wear the device all the time.

2.2 Analysis of Patent 2, US Patent Application US 20110221666 A1

Patent Title: Methods and Apparatus For Gesture Recognition Mode Control

Patent Holders: John David Newton, Stephen Sheng Xu, Brend Port, Trent Smith

Patent Filing Date: 11/24/2009

This present invention is a computing device that comprises a processor and an imaging device. The processor supports both gesture recognition mode, when the gesture is recognized, and busy mode, when the processor is already operating and does not recognize an available gesture. The processor can also be configured to enter or exit the gesture recognition mode based on various input events. The processor can determine whether a gesture recognition mode is activated and execute a command corresponding to the input received when gesture recognition mode is activated. [4]

Our project is similar in a way that we also detect gestures as inputs and carry out corresponding commands. What differing ours from theirs are, first, they specifically ask users to use fingers to make gestures while ours is not limited to fingers. In fact, most of our gestures are sensed by waving our arms. However, they are using finger gestures to activate gesture recognition mode while our gesture recognition mode is always enabled and waiting for inputs.

2.3 Analysis of Patent 3, US Patent Application US 7411575 B2

**Patent Title: Gesture recognition method and touch system incorporating the same**

**Patent Holders: Douglas B. Hill, Gerald D. Morrison  
Patent Filing Date: 09/16/2003**

A gesture recognition method includes detecting multiple pointers in close proximity to a touch surface to determine if the multiple pointers are being used to perform a known gesture. When the multiple pointers are being used to perform a known gesture, executing a command associated with the gesture. A touch system incorporating the gesture recognition method is also provided. [5]

Both ours and theirs are based on gesture recognition. However, their approach requires users to touch the touch surface in order to create gestures. As mentioned above, they are using multiple pointers to perform a known gesture, meaning that the user has to use fingers to touch the surface in order to create gestures, whereas our definition of gesture is based on an image or movement made in space and detected by our RGB-D camera.

3.0 Sources Cited:

*Throughout this and other papers, use of the IEEE citation style should be used. Use of embedded hyperlinks for all web-based sources is required. A reference to the IEEE citation style format is provided* [*here*](http://www.ieee.org/documents/ieeecitationref.pdf)*.*

[1] 6 Steps to Successful FCC Testing & Certification of Electrical Products. (2019). Available: <https://www.metlabs.com/wireless/6-steps-to-successful-fcc-testing-certification-of-electrical-products/>

[2] Smart Home Testing and Certification (2019). Available: <https://www.tuv.com/world/en/smart-home-testing-and-certification.html>

[3] Wearable Gesture Control Device and Method for Smart Home System (2017) Available:

<http://www.freepatentsonline.com/20170123502.pdf>

[4] Methods and Apparatus For Gesture Recognition Mode Control (2010) Available:

<https://patents.google.com/patent/US20110221666A1/en?q=gesture&oq=gesture>

[5] Gesture recognition method and touch system incorporating the same

<https://patents.google.com/patent/US7411575B2/en?q=gesture&oq=gesture>