

IPR2018-01257 (Patent No. 8,552,978)

IPR2018-01258 (Patent No. 8,441,438)

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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GOOGLE LLC, ZTE (USA), INC., SAMSUNG ELECTRONICS CO., LTD.,  
LG ELECTRONICS INC., HUAWEI DEVICE USA, INC.,  
HUAWEI DEVICE CO. LTD., HUAWEI TECHNOLOGIES CO. LTD.,  
HUAWEI DEVICE (DONGGUAN) CO. LTD.,  
HUAWEI INVESTMENT & HOLDING CO. LTD.,  
HUAWEI TECH. INVESTMENT CO. LTD., and  
HUAWEI DEVICE (HONG KONG) CO. LTD.,  
Petitioner

v.

CYWEE GROUP LTD.

Patent Owner

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Case IPR2018-01257

Case IPR2018-01258

Patent No. 8,552,978

Patent No. 8,441,438

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**DECLARATION OF SHUN-NAN LIOU**

**July 31, 2019**

1. I am a named-inventor of U.S. Patent Nos. 8,441,438 and 8,552,978, that are owned by and assigned to CyWee Group Ltd. (“CyWee Group”) and that are the subject of the above-captioned matters. I am over the age of 21 and competent to make this declaration. I am the CEO of CyweeMotion Group Ltd and am president of CyWee Motion Inc.

2. A true and correct copy of a document entitled “CyWee, Where Technology Entertains 2009.09” is attached as Exhibit 2021. The document’s properties show that it was created December 18, 2008 and last modified September 11, 2009.

3. A true and correct copy of a document entitled “JIL Game System Hardware Specification Ver. 1.5” is attached as Exhibit 2022.

4. A true and correct copy of a JIL Phone Bill of Materials, dated May 24, 2010, is attached as Exhibit 2023.

5. True and correct copies of photographs taken of a JIL Phone prototype and the printed circuit board in that device are attached as Exhibit 2024.

6. A true and correct copy of the CyWee Phone API Reference is attached as Exhibit 2025.

7. A true and correct copy of a document entitled “CyWee Motion Fusion Solution” is attached as Exhibit 2026.

8. A true and correct copy of a document entitled “CyWee Where technology entertains Technical Presentation: Motion Technology and Gaming Applications” is attached as Exhibit 2027.

9. A true and correct copy of an email to James Shen at Qualcomm, dated July 29, 2009, is attached as Exhibit 2028. A true and correct copy of an attachment to that email is attached as Exhibit 2029.

10. A true and correct copy of a Mutual Non-Disclosure Agreement between CyWee and Qualcomm Inc. is attached as Exhibit 2030.

11. A computer dedicated to the production of JIL phone, which contained a great deal of information regarding the development process and code for the project, was reformatted after the conclusion of the JIL phone project, making the code difficult to locate. Source code similar to the code that ran on the JIL phone was located in October 2016. Since then, CyWee has continued to search for the original code used in the project. I recently located the original source code for the JIL phone in an internal CyWee email dated March 16, 2010. That email is titled “Latest JIL phone with MR project of IIMR” and includes a file titled IIMR\_dll\_2010-02-12-1(Qualcomm\_MR).rar. The .rar file is a compressed file, which includes a file named Attitude.cpp, which contains CyWee’s sensor fusion code for the JIL phone as of February 12, 2010 according to the “date modified” timestamp on the file. A true and correct copy of Attitude.cpp is attached hereto as Exhibit 2031.

12. I worked with my fellow inventors, Zhou Ye and Chin-Lung Li, on developing motion sensing technologies.

13. In the 2008-2010 period, I was involved in research and product development activities related to motion sensing, including a game controller known as the Z controller, and the JIL phone.

14. Before May 22, 2009, CyWee selected hardware for the “JIL Game Phone Project.” *See* Exhibit 2021 at 11 (providing project name), Exhibit 2022 at 4, 7 (listing revisions to hardware specification, and describing CyWee’s involvement). CyWee was designated as the “Motion HW/SW [Hardware/Software] Solution Provider” for the project. Exhibit 2021 at 11. The hardware selected included a smartphone with an integrated display that could be used as a 3D pointing device for game control. The hardware selected before May 22, 2009 show that the JIL phone

was a smartphone that included 9-axis output. Exhibit 2021 at 9. More specifically, the device included a 3-axis accelerometer, 3-axis rotation output, and a 3-axis magnetometer. *Id.* The JIL Phone hardware specifications were documented on May 22, 2009, then updated on June 22, 2009 and November 7, 2009. Exhibit 2022 at 4. The hardware specifications corresponding to the motion sensors continued to be updated through at least May 24, 2010 as the team refined its selection of sensor hardware components. Exhibit 2023.

15. The inventions claimed in the '438 patent were conceived of on or before May 22, 2009 and diligently reduced to practice by at least as early as July 29, 2009. *See* Exhibit 2028 (referencing JIL phone). Claims 10 and 12 of the '978 patent were conceived of by the end of May 2009 and diligently reduced to practice by at least as early as September 25, 2009. *See* Exhibit 2025 at 2 referencing API software for JIL Phone. Between the date of conception and the actual reduction to practice of each patent, CyWee held weekly research and development meetings for each of the on-going projects, which were attended by a team consisting of the co-inventors of the '438 and '978 Patents and others working at our direction.

16. A JIL Phone prototype is shown below:



Exhibit 2024 at 1. The housing and PCB used in the JIL phone prototype were manufactured by Foxconn.

17. The JIL Phone was revolutionary in several respects. Unlike earlier devices (including earlier Apple mobile devices) the JIL Phone incorporated a gyroscope, accelerometer, and magnetometer, which together were capable of 9-axis output. Exhibit 2025 at 4; *see also* Exhibit 2027 at 22 (“CyWee’s motion module supports various types of games, allows for 9-axis motion recognition . . .”). The JIL Phone performed sensor fusion by using sensor data from the three sensors to reduce errors when determining its orientation or attitude.

18. The JIL Phone shown above included an InvenSense IXZ-650 gyroscope capable of generating 3-axis output, a Yamaha YAS529 magnetometer, and a STMicroelectronics 2935 33DL accelerometer. Alternatively, the accelerometer and magnetometer could be replaced with an Aichi Micro Intelligent Corp. AMI602 6-axis motion sensor module. Exhibit 2023.

19. The team working on JIL Phone motion sensor technologies included my co-inventors on the patents-in-suit, Joe Ye and Chin-Lung Li. The team further included other CyWee personnel working at our direction, including but not limited to programmers.

20. Prior to the JIL Phone, CyWee developed the CyWee Z controller. The Z controller included a 3-axis accelerometer, and a gyroscope capable of outputting 3-axis rotational movement. *See* Exhibit 2021 at 3. A picture of the Z controller is shown below:



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