IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

CYWEE GROUP LTD.,	§	
	§	
Plaintiff,	§	
	§	
v.	§	
	§	
SAMSUNG ELECTRONICS CO. LTD. and SAMSUNG ELECTRONICS AMERICA, INC.,	§	Case No. 2:17-CV-140-WCB
	§	
	§	
	§	
Defendants.	§	

MEMORANDUM OPINION AND ORDER

Before the Court is Defendants Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.'s Motion for Summary Judgment of Invalidity under 35 U.S.C. § 101. On October 24, 2018, the Court held a hearing on various motions in this case, including the motion for summary judgment of invalidity. After considering the arguments made in the parties' briefs and during the hearing, the Court DENIED the motion in open court and noted the denial in a minute order issued on October 26, 2018. Dkt. No. 238, at 1. This memorandum opinion and order details the reasons for the Court's ruling.

BACKGROUND

Plaintiff CyWee Group Ltd. owns U.S. Patent No. 8,441,438 ("the '438 patent"), which is entitled "3D Pointing Device and Method for Compensating Movement Thereof," and U.S. Patent No. 8,552,978 ("the '978 patent"), which is entitled "3D Pointing Device and Method for Compensating Rotations of the 3D Pointing Device Thereof." CyWee has asserted claims 1, 3-5, 14-17, and 19 of the '438 patent and claims 10 and 12 of the '978 patent against defendants Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. Dkt. No. 178, at 1, 5.

Claim 1 of the ’438 patent, which is representative of the four asserted apparatus claims, provides as follows:

> A three-dimensional (3D) pointing device subject to movements and rotations in dynamic environments, comprising:
>
> a housing associated with said movements and rotations of the 3D pointing device in a spatial pointer reference frame;
>
> a printed circuit board (PCB) enclosed by the housing;
>
> a six-axis motion sensor module attached to the PCB, comprising a rotation sensor for detecting and generating a first signal set comprising angular velocities ωx, ωy, ωz associated with said movements and rotations of the 3D pointing device in the spatial pointer reference frame, an accelerometer for detecting and generating a second signal set comprising axial accelerations Ax, Ay, Az associated with said movements and rotations of the 3D pointing device in the spatial pointer reference frame; and
>
> a processing and transmitting module, comprising a data transmitting unit electrically connected to the six-axis motion sensor module for transmitting said first and second signal sets thereof and a computing processor for receiving and calculating said first and second signal sets from the data transmitting unit, communicating with the six-axis motion sensor module to calculate a resulting deviation comprising resultant angles in said spatial pointer reference frame by utilizing a comparison to compare the first signal set with the second signal set whereby said resultant angles in the spatial pointer reference frame of the resulting deviation of the six-axis motion sensor module of the 3D pointing device are obtained under said dynamic environments, wherein the comparison utilized by the processing and transmitting module further comprises an update program to obtain an updated state based on a previous state associated with said second signal set and a measured state associated with said second signal set; wherein the measured state includes a measurement of said second signal set and a predicted measurement obtained based on the first signal set without using any derivatives of the first signal set.

Claim 14 of the ’438 patent is representative of the five asserted method claims of that patent. It provides as follows:

> A method for obtaining a resulting deviation including resultant angles in a spatial pointer reference frame of a three-dimensional (3D) pointing device utilizing a six-axis motion sensor module therein and subject to movements and rotations in dynamic environments in said spatial pointer reference frame, comprising the steps of:

obtaining a previous state of the six-axis motion sensor module; wherein the previous state includes an initial-value set associated with previous angular velocities gained from the motion sensor signals of the six-axis motion sensor module at a previous time T−1;

obtaining a current state of the six-axis motion sensor module by obtaining measured angular velocities ωx, ωy, ωz gained from the motion sensor signals of the six-axis motion sensor module at a current time T;

obtaining a measured state of the six-axis motion sensor module by obtaining measured axial accelerations Ax, Ay, Az gained from the motion sensor signals of the six-axis motion sensor module at the current time T and calculating predicted axial accelerations Ax′, Ay′, Az′ based on the measured angular velocities ωx, ωy, ωz of the current state of the six-axis motion sensor module without using any derivatives of the measured angular velocities ωx, ωy, ωz; said current state of the six-axis motion sensor module is a second quaternion with respect to said current time T; comparing the second quaternion in relation to the measured angular velocities ωx, ωy, ωz of the current state at current time T with the measured axial accelerations Ax, Ay, Az and the predicted axial accelerations Ax′, Ay′, Az′ also at current time T;

obtaining an updated state of the six-axis motion sensor module by comparing the current state with the measured state of the six-axis motion sensor module; and

calculating and converting the updated state of the six axis motion sensor module to said resulting deviation comprising said resultant angles in said spatial pointer reference frame of the 3D pointing device.

Claim 10 of the ’978 patent is representative of the two asserted method claims of that patent. It provides as follows:

A method for compensating rotations of a 3D pointing device, comprising:

generating an orientation output associated with an orientation of the 3D pointing device associated with three coordinate axes of a global reference frame associated with Earth;

generatinq [sic] a first signal set comprising axial accelerations associated with movements and rotations of the 3D pointing device in the spatial reference frame;

generating a second signal set associated with the Earth’s magnetism; generating the orientation output based on the first signal set, the second signal set and the rotation output or based on the first signal set and the second signal set;

> generating a rotation output associated with a rotation of the 3D pointing device associated with three coordinate axes of a spatial reference frame associated with the 3D pointing device; and
> using the orientation output and the rotation output to generate a transformed output associated with affixed reference frame associated with a display device, wherein the orientation output and the rotation output is generated by a nine-axis motion sensor module; obtaining one or more resultant deviation [sic] including a plurality of deviation angles using a plurality of measured magnetisms Mx, My, Mz and a plurality of predicted magnetism [sic] Mx′, My′, Mz′ for the second signal set.

The defendants have moved for summary judgment invalidating all of the asserted claims of the ’438 patent and the ’978 patent as ineligible for patenting under section 101 of the Patent Act, 35 U.S.C. § 101. In their motion, the defendants particularly focus on the language of claim 14 of the ’438 patent and claim 10 of the ’978 patent. The defendants contend that “CyWee’s patent claims merely recite algorithms that operate on data obtained from conventional sensors,” and that the claims are therefore not directed to subject matter that is eligible for patenting under section 101. Dkt. No. 178, at 1.

DISCUSSION

Section 101 of the Patent Act states that “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent.” However, patent protection does not extend to claims that monopolize “the basic tools of scientific and technological work.” *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972). In order to determine whether the claims of the ’139 patent are patent-eligible under section 101, the court “must first determine whether the claims at issue are directed to a patent-ineligible concept,” such as a law of nature, a mathematical formula, or an abstract idea. *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014). If the court finds that the claims are directed to such a patent-ineligible concept, the court must then examine the

elements of the claims to determine whether they contain "an inventive concept sufficient to transform the claimed [ineligible] idea into a patent-eligible application." *Alice*, 134 S. Ct. at 2357 (internal quotations and citation omitted). If the court determines that the claims are not directed to a patent-ineligible concept, it need not proceed to step two. *See Enfish, LLC v. Microsoft Corp.*, 850 F.3d 1327, 1339 (Fed. Cir. 2016).

Whether a claim that recites a mathematical formula is directed to a patent-ineligible concept depends on the role that the mathematical formula plays in the claim. "[A] process is not unpatentable simply because it contains a . . . mathematical algorithm." *Parker v. Flook*, 437 U.S. 584, 590 (1978). As the Supreme Court noted in *Diamond v. Diehr*, 450 U.S. 175, 187 (1981), "an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." The Federal Circuit has likewise stated that "[c]laims are patent eligible under § 101 'when a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect.'" *Thales Visionix, Inc. v. United States*, 850 F.3d 1343, 1347–48 (Fed. Cir. 2017) (quoting *Diehr*, 450 U.S. at 192). On the other hand, the Supreme Court has explained that a mathematical formula is not itself patent-eligible subject matter, "and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment . . . [or by subsequently claiming] insignificant post-solution activity." *Diehr*, 450 U.S. at 191–92 (internal citations omitted).

The claims asserted in this case involve using a particular combination of sensors to gather raw data points relating to an object's position, and then placing those data points into a mathematical formula to determine the orientation of the object in a spatial reference frame. The

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