

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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APPLE, INC.,  
Petitioner,

v.

UNILOC 2017 LLC,  
Patent Owner.

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IPR2018-01028  
Patent 7,881,902 B1

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Before SALLY C. MEDLEY, JOHN F. HORVATH, and  
SEAN P. O'HANLON, *Administrative Patent Judges*.

HORVATH, *Administrative Patent Judge*.

JUDGMENT  
Final Written Decision  
Determining All Challenged Claims Unpatentable  
*35 U.S.C. § 318(a)*

## I. INTRODUCTION

### A. Background

Apple Inc. (“Petitioner”) filed a Petition requesting *inter partes* review of claim 8 (“the challenged claim”) of U.S. Patent No. 7,881,902 B1 (Ex. 1001, “the ’902 patent”). Paper 2 (“Pet.”). Uniloc 2017 LLC (“Patent Owner”)<sup>1</sup> filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). Upon consideration of the Petition and Preliminary Response, we instituted *inter partes* review of claim 8 on the ground raised in the Petition. Paper 8 (“Dec. Inst.”)

Patent Owner filed a Response to the Petition (Paper 10, “PO Resp.”), Petitioner filed a Reply (Paper 11, “Pet. Reply”), and Patent Owner filed a Sur-Reply (Paper 12, “PO Sur-Reply”). We held a consolidated oral hearing for this case and related cases involving the same parties and related patents on April 2, 2019, and the hearing transcript is included in the record. *See* Paper 17 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6(b). This is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons set forth below, we find Petitioner has shown by a preponderance of evidence that claim 8 of the ’902 patent is unpatentable.

### B. Related Matters

Petitioner and Patent Owner identify numerous district court matters that could affect, or be affected by, a decision in this proceeding. *See* Pet. 1–2; Paper 3, (2); Paper 6, (2). In addition, our Institution Decision identifies

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<sup>1</sup> Uniloc 2017 LLC identifies itself, Uniloc USA, Inc., and Uniloc Licensing USA LLC as real parties-in-interest. Paper 6 (1).

numerous *inter partes* reviews challenging claims of the '902 patent and related U.S. Patent Nos. 7,653,508 B1 and 8,712,723 B1, that could affect, or be affected by, this proceeding. *See* Dec. Inst. 2–3.

*C. Evidence Relied Upon*<sup>2</sup>

Reference		Effective Date <sup>3</sup>	Exhibit
Pasolini	US 7,463,997 B2	Oct. 2, 2006	1005
Fabio	US 7,698,097 B2	Oct. 2, 2006	1006
Tsuji	US 7,297,088 B2	Apr. 19, 2005	1010

*D. Instituted Ground of Unpatentability*

Claim Challenged	35 U.S.C. §	References
8	103(a)	Fabio, Pasolini, and Tsuji

II. ANALYSIS

*A. The '902 Patent*

The '902 patent relates to “a method of . . . counting periodic human motions such as steps.” Ex. 1001, 1:9–11. The method involves the use of a “portable electronic device that includes one or more inertial sensors” that “measure accelerations along a single axis or multiple axes.” *Id.* at 2:24–28.

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<sup>2</sup> Petitioner also relies upon the Declaration of Joseph A. Paradiso, Ph.D. (Ex. 1003).

<sup>3</sup> Petitioner relies on the filing dates of Pasolini, Fabio, and Tsuji as the effective date for determining their availability as prior art under 35 U.S.C. § 102(e). Pet. 8–9.

Figure 1 of the '902 patent is reproduced below.

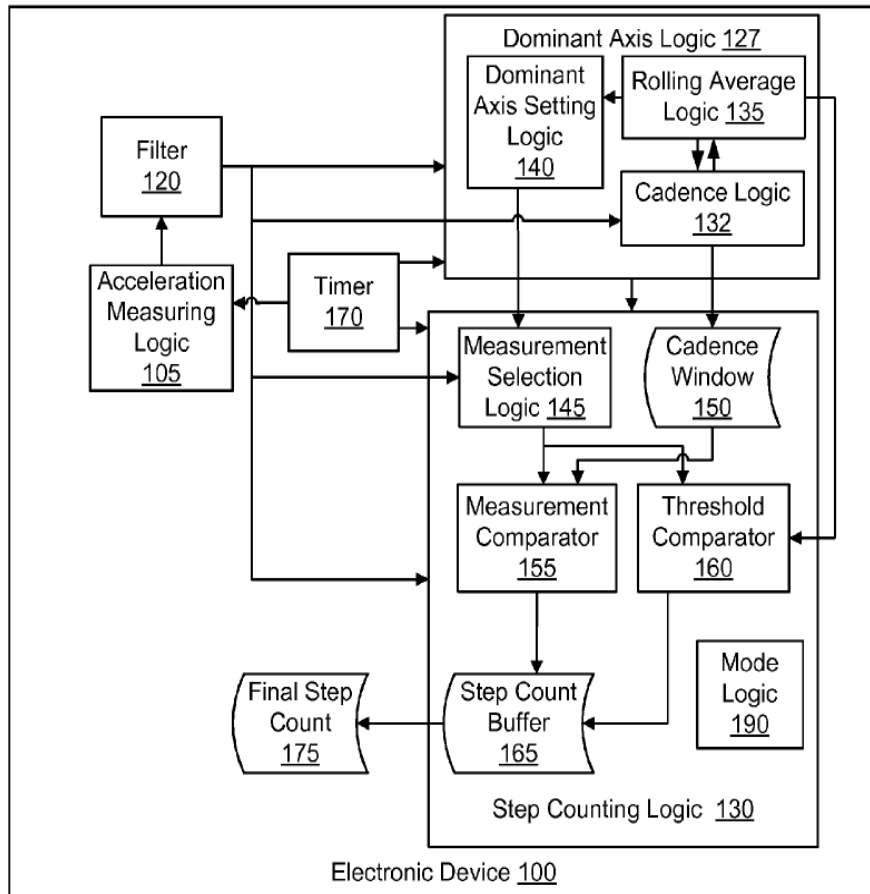


Figure 1 of the '902 patent is a block diagram illustrating electronic device 100. *Id.* at 1:47–48. Device 100 includes acceleration measuring logic 105 (e.g., inertial sensors), dominant axis logic 127, and step counting logic 130. *Id.* at 2:19–24, 2:38–43, Fig. 1. Device 100 “may be used to count steps or other periodic human motions,” where a “step” is “any user activity having a periodic set of repeated movements.” *Id.* at 2:29–30, 3:34–38. According to the '902 patent, device 100 accurately counts steps “regardless of the placement and/or orientation of the device on a user,” and regardless of

whether the device “maintains a fixed orientation or changes orientation during operation.” *Id.* at 2:31–35.

Dominant axis logic 127 includes cadence logic 132 and rolling average logic 135. *Id.* at 2:66–3:2, Fig. 1. Inertial sensors 105 measure acceleration data, and cadence logic 132 analyzes this data to detect “a period and/or cadence of a motion cycle,” which may be based on user activity such as running or walking. *Id.* at 2:38–40, 3:14–18, 3:46–51. Cadence logic 132 determines “a cadence window 150 to be used by the step counting logic 130.” *Id.* at 3:11–14. Cadence window 150 is “a window of time since a last step was counted that is looked at to detect a new step.” *Id.* at 3:65–4:1. Cadence window 150 is initially set to a default value, and can be dynamically updated to reflect the cadence or period of detected steps once a minimum number of steps have been detected. *Id.* at 3:57–61, 4:22–28, 4:61–5:6. The cadence or stepping period can be determined as a “rolling average of the stepping periods over previous steps.” *Id.* at 3:61–62.

Cadence logic 132 also determines “one or more sample periods to be used by the rolling average logic 135.” *Id.* at 3:11–14, 5:31–34. The sample periods can be set to “the length of, or longer than, the stepping period,” including a “multiple of the stepping period.” *Id.* at 5:34–37. Rolling average logic 135 “creates one or more rolling averages of accelerations . . . measured by the inertial sensor(s) over the sample period(s) set by the cadence logic 132.” *Id.* at 5:39–41. These rolling averages are used to determine an orientation of the electronic device and a threshold against which acceleration measurements are compared. *Id.* at 5:41–45.

Dominant axis logic 127 includes dominant axis setting logic 140, which determines an orientation of device 100 or of the inertial sensor(s)

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