## UNITED STATES PATENT AND TRADEMARK OFFICE

## BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC., Petitioner v. UNILOC LUXEMBOURG S.A. Patent Owner

> Case No. IPR2018-01756 U.S. Patent No. 7,653,508

## DECLARATION OF WILLIAM C. EASTTOM II (CHUCK EASTTOM)

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	<ul> <li>D. 1 d. "updating the dominant axis as the orientation of the inertial sensor changes; and"</li></ul>
	<ul> <li>E. Claim 1 e "counting periodic human motions by monitoring accelerations relative to the dominant axis."</li></ul>
	<ul> <li>F. Claim 2 "The method of claim 1, further comprising: using acceleration measurements along only the dominant axis to count steps."</li></ul>
	<ul> <li>G. Claim 3 "The method of claim 1, further comprising: maintaining a cadence window, wherein the cadence window is continuously updated as an actual cadence changes; and"</li></ul>

H. Claim 3 b "counting a periodic human motion when an acceleration measurement that meets motion criteria is within the cadence window." 38
<ol> <li>Claim 4 "The method of claim 3, wherein at least one of the motion criteria is a dynamic motion criterion, the dynamic motion criterion being continuously updated to reflect current conditions."</li></ol>
J. Claim 5 "The method of claim 4, wherein the dynamic motion criteria includes at least a lower threshold, wherein the lower threshold is adjusted based on at least one of a rolling average of accelerations and the orientation of the inertial sensor."
K. Claim 11 b "a dominant axis logic to continuously determine an orientation of a device, to assign a dominant axis, and to update the dominant axis as the orientation of the device changes; and
L. Claim 11 c. "a counting logic to count periodic human motions by monitoring accelerations relative to the dominant axis."
M. Claim 12 "The device of claim 11, wherein: [t]he counting logic uses acceleration measurements along only the dominant axis to count steps.". 44
122. Claim 13 "The device of claim 11, further comprising: a cadence logic to continuously update a dynamic cadence window; and the counting logic to count a periodic human motion when an acceleration measurement that meets motion criteria is taken within the cadence window
N. Claim 14 "The device of claim 11, further comprising: a comparator, to compare measurements of acceleration to dynamic motion criteria, the dynamic motion criteria being continuously updated to reflect current conditions; and the counting logic to count a periodic human motion when the measurements of acceleration satisfy the dynamic motion criteria." 46
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A. Claim 6: "A method of monitoring human activity using an inertial sensor, comprising: running a device that includes the inertial sensor in a non-active mode, in which periodic human motions are buffered; switching the device from the non-active mode to an active mode, after identifying a number of

VIII.

Β.	Claim 7 "The method of claim 6, further comprising: switching the device from the active mode to the non-active mode when a number of expected periodic human motions are not identified in the appropriate cadence windows."
C.	Claim 8 "The method of claim 6, further comprising: switching from a sleep mode to the non-active mode of operation when an acceleration is detected."
D.	Claim 15 Claim 15 "A device including an inertial sensor, comprising: a counting logic, to identify and count periodic human motions; a mode logic, to switch the device from a non-active mode to an active mode after a number of periodic human motions are detected within appropriate cadence windows by the counting logic; and a buffer, to buffer periodic human motions when the device is in the non-active mode"
E.	Claim 16 "The device of claim 15, wherein: the mode logic to switch the device from the active mode to the non-active mode when a number of expected periodic human motions are not identified in the appropriate cadence windows."
F.	Claim 19 "The device of claim 15, further comprising: a cadence logic, to set the appropriate cadence windows."
G.	Claim 20 "The device of claim 19, where the cadence logic adjusts the cadence windows based on a measured cadence associated with the periodic human motion."
со	NCLUSIONS

IX.

#### I. INTRODUCTION

1. I have been retained by Uniloc to provide my expert opinions regarding validity of U.S. Patent No. U.S. Patent No. 7,653,508 ("508 Patent"). The '508 patent was granted January 26, 2010 based on from application 11/644,455 that was filed on December 22, 2006.

2. I am being compensated for my time at my standard consulting rate of \$300 per hour. I am also being reimbursed for expenses that I incur during the course of this work. My compensation is not contingent upon the results of my study or the substance of my opinions.

#### II. BACKGROUND AND QUALIFICATIONS

3. I have 25+ years of experience in the computer science industry including extensive experience with computer security, computer programming, and computer networking. I have authored 26 computer science books, including textbooks used at universities around the world. I hold a Doctor of Science in Cyber Security, as well as two masters (one in Applied Computer Science). I hold 44 different computer industry certifications, including many in networking subjects. I am experienced with multiple programming languages. I also have extensive experience in computer networking. I have extensive experience with mobile devices, including all aspects of mobile devices (hardware and software), mobile forensics, and programming for mobile devices. I am a Distinguished Speaker for the Association of Computing Machinery (ACM), and a reviewer for the IEEE Security and Privacy journal, as well as a reviewer for the four

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