

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GARMIN INTERNATIONAL, INC.
Petitioner

v.

BLACKBIRD TECH, LLC d/b/a BLACKBIRD TECHNOLOGIES
Patent Owner

IPR2017-01058
Patent 6,434,212

DECLARATION OF DR. KENNETH FYFE

I, Kenneth Fyfe, hereby declare the following:

I. BACKGROUND AND QUALIFICATIONS

1. My name is Kenneth Fyfe and I am over 21 years of age and otherwise competent to make this Declaration. I make this Declaration based on facts and matters within my own knowledge and on information provided to me by others.

2. I have been retained as an expert in this matter by Counsel for Garmin International, Inc. to provide my independent opinions on certain issues requested by Counsel for Petitioner relating to the accompanying petition for *Inter Partes* Review of U.S. Patent No. 6,434,212 (“the ‘212 Patent”). My compensation in this matter is not based on the substance of the opinions rendered here.

3. I have summarized in this section my educational background, career history, and other relevant qualifications. I have also attached a current version of my curriculum vitae as **Appendix A**. It lists over 90 articles, conference presentations and technical reports that I have authored or co-authored in these areas. My research has been funded in excess of 2 million dollars by a variety of grants awarded by both federal and provincial governments and from private industry.

4. I have been awarded a total of 11 patents in various countries, including the United States, Canada, Germany, France, Great Britain, Finland and Belgium, issued from the period of 1999 to 2006. These patents are primarily in

the field of motion analysis and exercise monitoring. My first patent was U.S. Patent No. 5,955,667, entitled “Motion Analysis System.” It issued on September 21, 1999, claimed priority to an October 11, 1996 provisional application, and outlined the use of accelerometers to measure the motion of a moving body – namely the foot of a runner. This concept was commercialized by a company that I cofounded (Dynastream Innovations, as mentioned above) and has sold millions of units around the world.

5. I am currently working for 4iiii Innovations as the Director of Algorithms, a position I have held since January 2014. Prior to that, I was a professor at the Engineering Transfer Program at MacEwan University in Edmonton, Alberta, Canada, where I had taught since 2010. I am also an adjunct faculty member at the University of Alberta where I worked as a professor in Mechanical Engineering from 1989 to 2003.

6. I received my Ph.D. in Mechanical Engineering from the University of Waterloo in 1986 specializing in vibration, acoustics and signal processing. I obtained my Master of Science in Mechanical Engineering from the University of Alberta in 1983 specializing in vibration. My Bachelor of Science in Mechanical Engineering was obtained from the University of Alberta in 1980.

7. Between 1986 and 1989, I did post-doctoral research at the Katholieke University of Belgium and worked for a private company, performing vibration, acoustics and signal analysis on automotive, rail and aerospace structures.

8. Then in the period from 1989 to 2003, I was employed as a professor in Mechanical Engineering performing teaching, mentoring and research. My research areas of interest included biomedical sensors, motion analysis, and acoustics. During this time, I developed an inertial device to measure the speed and distance of a person walking, jogging or running. This device was a small pod with accelerometers, processor and radio, attached to a shoe, which computes the kinematics of the person and transmits the resulting information to the user. I began development in approximately 1994 and had developed a prototype of the device by approximately 1995.

9. I cofounded Dynastream Innovations to commercialize this technology in 1999. In 2003, I left the university to work with Dynastream in product development. In 2006, Garmin purchased Dynastream and I continued to work there until 2007.

10. In 2009 and 2010, I worked for the NeuroScience Department at the University of Alberta applying our inertial methodology to assistive technologies. From 2010 to 2013, I worked at MacEwan University as a professor involved in teaching and research in Engineering. Since January 2014, I have been working

for 4iiii Innovations developing personal measurement devices that involve inertial sensors and signal processing.

11. As part of my work in connection with this proceeding, I have reviewed the following materials:

- U.S. Patent 6,434,212 B2 to Pyles (*'212 Patent*) (EX1001)
- File History of U.S. Patent 6,175,608 B2 to Pyles (*'608 Patent File History*) (EX1003)
- File History of U.S. Patent 6,434,212 B2 to Pyles (*'212 Patent File History*) (EX1004)
- U.S. Patent 5,583,776 to Levi et al. (*Levi*) (EX1005)
- PCT Publication WO 87/05229 to Johnson et al. (*Johnson*) (EX1006)
- U.S. Patent 4,387,437 to Lowrey (*Lowrey*) (EX1007)
- U.S. Patent 5,724,265 to Hutchings (*Hutchings*) (EX1008)
- U.S. Patent 6,175,608 to Pyles (*'608 Patent*) (EX1009)
- U.S. Patent 4,962,469 to Ono et al. (*Ono*) (EX1010)
- *Monitoring Physical Activity in Children*, Cale, 1993 (*Cale*) (EX1011)
- *Taking Steps Toward Increased Physical Activity: Using Pedometers to Measure and Motivate*, Research Digest, Series 3, No. 17 June 2002 (*Research Digest*) (EX1012)
- Letter from James Madison to Thomas Jefferson, August 10, 1788. Library of Congress (*Letter from Madison to Jefferson*) (EX1013)
- U.S. Patent 694,652 to Kuhn (*Kuhn*) (EX1014)
- U.S. Patent 765,992 to Porter (*Porter*) (EX1015)
- U.S. Patent 982, 336 to Wimperis (*Wimperis*) (EX1016)
- U.S. Patent 2,702,186 to Head et al. (*Head*) (EX1017)
- *Accelerometry – A Technique for the Measurement of Human Body Movements* Morris. J. Biomechanics, 1973. Vol. 6. pp. 729-736 (*Morris*) (EX1018)
- U.S. Patent 3,818,194 to Biro (*Biro*) (EX1019)
- U.S. Patent 3,797,010 to Adler et al. (*Adler*) (EX1020)
- *Electronic Pedometer for Joggers* Modla, Andrew A. Popular Electronics. August, 1979. pp. 42-43 (EX1021)
- U.S. Patent 4,371,945 to Karr et al. (*Karr*) (EX1022)

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