

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Google LLC

Petitioner

v.

Cywee Group Ltd.

(record) Patent Owner

Patent No. 8,552,978

DECLARATION OF PROF. MAJID SARRAFZADEH

TABLE OF CONTENTS

I.	ENGAGEMENT AND COMPENSATION.....	4
II.	QUALIFICATIONS	4
III.	SUMMARY OF OPINIONS	6
IV.	MATERIALS REVIEWED	6
V.	UNDERSTANDING OF THE RELEVANT LAW	6
A.	Anticipation	6
B.	Obviousness	7
VI.	LEVEL OF ORDINARY SKILL IN THE ART	10
VII.	RELEVANT TIMEFRAME FOR DETERMINING OBVIOUSNESS	10
VIII.	TECHNICAL INTRODUCTION.....	11
IX.	CLAIM INTERPRETATION.....	16
A.	Claim 10—“spatial reference frame” and “spatial reference frame associated with the 3D pointing device”	17
B.	Claim 10—“rotation output”	22
X.	THE PRIOR ART (ZHANG, BACHMANN, AND LIBERTY)	23
1.	Overview of Zhang	23
2.	Overview of Bachmann	29
3.	Overview of Liberty.....	36
XI.	CLAIMS 10 AND 12 WOULD HAVE BEEN OBVIOUS OVER ZHANG AND BACHMANN.....	43
A.	Summary of Opinion	43
B.	Overview of the obviousness determination	43
1.	Combining Zhang and Bachmann	44
2.	Rationale for combining Zhang and Bachmann	45
3.	Ability to Implement and Reasonable Expectation of Success	51
C.	How the Combination Meets the Elements of the Claims	53
1.	Claim 10.....	53

2.	Claim 12.....	73
XII.	CLAIMS 10 AND 12 WOULD HAVE BEEN OBVIOUS OVER LIBERTY AND BACHMANN.....	73
A.	Summary of Opinion	73
B.	Overview of the Obviousness Determination.....	74
1.	Combining Liberty and Bachmann.....	74
2.	Rationale for the Combination.....	75
3.	Ability to Implement and Reasonable Expectation of Success	79
C.	How the Combination Meets the Elements of the Claims	80
1.	<i>Claim 10</i>	80
2.	<i>Claim 12</i>	85
XIII.	OATH.....	86

I. ENGAGEMENT AND COMPENSATION

1. My name is Majid Sarrafzadeh. I have been retained by Google LLC for the purpose of providing my opinion with respect to the unpatentability of U.S. Pat. No. 8,552,978 (“the ’978 patent”). I am being compensated for my time in preparing this declaration at the rate of \$650/hr, and my compensation is not dependent upon my opinions or the outcome of the proceedings.

II. QUALIFICATIONS

2. I currently hold the title of Distinguished Professor and Director of Embedded and Reconfigurable Computing (ER) Laboratory in the Computer Science Department at the University of California, Los Angeles (UCLA). I also have a courtesy appointment in the Department of Electrical Engineering at UCLA. I am the Co-Director of the Center for SMART Health, Co-Director for the BRITE Center on Minority Health Disparities, and a Co-Founder of the UCLA Wireless Health Institute.

3. I believe that I qualify as an expert in the field of sensors and sensor data processing, and as at least a person of ordinary skill in the art. My current Curriculum Vitae is attached to the end of this declaration, and summarizes my qualifications.

4. I received my Bachelor’s Degree from the University of Illinois at Urbana-Champaign in Electrical and Computer Engineering in 1982, a Master of

Science Degree in Electrical and Computer Engineering University of Illinois in 1984, and a Ph.D. in Electrical and Computer Engineering University of Illinois in 1987.

5. From 1987 to 1991, I was an Assistant Professor in the Department of Electrical and Computer Engineering at Northwestern University. From 1991-1997, I held the title of Associate Professor, also in the Department of Electrical and Computer Engineering at Northwestern University. From 1997-2000, I held the title of Full Professor in that department.

6. I am an author or co-author on more than 500 publications in electrical engineering and computer sciences. Many of my publications relate to the use of sensors and sensor networks to track human body movement and health indicators.

7. I have used various sensors including motion sensors in my research. I have designed and built hardware and software systems for motion tracking, gait analysis, 3D rehab systems, and gaming just to name a few. I have performed data capture, data processing and analytics with these mobile systems. I have utilized the design in remote monitoring systems. In many of my projects I have developed algorithms relating to sensor fusion. For example, I have used motion sensor fusion to cancel motion noise in other signals, such as when working with photoplethysmography (PPG). I have used pressure sensors, accelerator and gyroscope fusion to construct motion data.

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.