

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC. AND MICROSOFT CORPORATION
Petitioners

v.

Neodron, Ltd.
Patent Owner

Case No. IPR2020-00778
U.S. Patent No. 7,821,425

DECLARATION OF DR. TONY GIVARGIS

I, Tony Givargis, hereby declare the following:

I. INTRODUCTION

1. I, Tony Givargis, have been retained by counsel for Petitioners as a technical expert in the above-captioned case. Specifically, I have been asked to render certain opinions in regard to the IPR petition with respect to U.S. Patent No. 7,821,425 (the “’425 Patent”). I understand that the Challenged Claims are claims 1-40. My opinions are limited to those Challenged Claims.

2. My compensation in this matter is not based on the substance of my opinions or the outcome of this matter. I have no financial interest in Petitioners. I am being compensated at an hourly rate of \$500 for my analysis and testimony in this case.

3. In reaching my opinions in this matter, I have reviewed the following materials:

- Exhibit 1001 - U.S. Patent No. 7,821,425 (“*the ’425 Patent*”)
- Exhibit 1002 - The ’425 Patent File History
- Exhibit 1004 - Provisional Application No. 60/395,368, filed July 12, 2002
- Exhibit 1005 - Provisional Patent No. 60/597,851, filed December 21, 2005
- Exhibit 1006 - *Updated Joint Proposed Claim Constructions*
- Exhibit 1007 - U.S. Patent No. 5,525,980 to Jahier et al. (“*Jahier*”)
- Exhibit 1008 - Quantum Technologies Research Group QT60161 Datasheet

- Exhibit 1009 - U.S. Patent No. 6,696,985 to Houston (“*Houston*”)
- Exhibit 1010 - U.S. Patent No. 5,760,715 to Senk (“*Senk*”)
- Exhibit 1011 - U.S. Patent No. 5,831,597 to West et al. (“*West*”)
- Exhibit 1012 - Affidavit from Chris Butler at the Internet Archive
- Exhibit 1013 - U.S. Patent No. 5,841,078 to Miller et al. (“*Miller*”)
- Exhibit 1014 - U.S. Patent No. 6,452,514 to Philipp (“*Philipp*”)
- Exhibit 1015 - PCT WO99/35745 to Gomes (“*Gomes*”)
- Exhibit 1016 - U.S. Patent No. 5,572,573 to Sylvan et al (“*Sylvan*”)
- Exhibit 1017 - U.S. Patent No. 6,727,892 to Murphy (“*Murphy*”)
- Exhibit 1018 - Japanese Patent No. 2,666,900 to Yasuhiro et al. (“*Yasuhiro*”)
- Exhibit 1019 - U.S. Patent No. 4,353,552 to Pepper, Jr. (“*Pepper*”)

A. Background and Qualifications

4. I am a Professor in the department of Computer Science at the University of California, Irvine (UCI) since July of 2001. I served as the Associate Dean in the School of Information and Computer Sciences at UCI from 2011 to 2016. I am currently, serving as the Vice Chair of the department of Computer Science at UCI. I graduated Cum Laude with a Bachelor of Science in Computer Science in 1997 and PhD in Computer Science in 2001 from the University of California, Riverside. My PhD thesis was entitled “*System-Level Exploration for Pareto-Optimal Configurations in Parameterized System-on-a-Chip*.” It received the School’s Best Thesis Award that year.

5. My research interests are generally directed at various aspects of the design of Embedded Systems. Embedded Systems are computing devices that operate within a larger system and include things such as consumer electronics, handheld devices, office equipment, industrial equipment, medical devices, autonomous and self-driving vehicles, and many other types of systems. Embedded systems are characterized as having rich sensing capabilities (e.g., keypads and touch sensitive input devices, heat/pressure sensors, etc.), actuation capabilities (e.g., displays, robotic arms, etc.) and heavy control logic (e.g., programmable embedded processors, dedicated processing elements and extensive software logic). More specifically, my research focuses on software for Embedded Systems, real-time systems, Internet of Things devices, mobile and handheld devices, ML/AI control algorithms for Cyber Physical Systems, compilers for embedded software and code transformations techniques for efficient software to hardware migration.

6. In addition to research, I exclusively teach the embedded systems courses at UCI both at the undergraduate as well as the graduate courses. My upper division Embedded Systems courses (CS 145 and CS 145L) are immensely popular with yearly enrollments exceeding 350 students. In these courses, students build a number of Embedded Systems from ground up out of components, including keypads and touch sensitive input devices. Additionally, they program the compute elements of their systems with various algorithms and application logic in order to

solve a problem. I also teach the graduate embedded software course (CS245) that covers more advanced topics related to Embedded Systems design, including modeling, design and validation of complex devices.

7. I have co-authored two textbooks on Embedded Systems design that are widely used in academia. In 2011, I received the prestigious ASEE's Frederick Emmons Terman Award for having authored these textbooks and advanced higher education in the areas of Embedded Systems. I have published over 100 peer-reviewed and archived conference and journal papers. I have 13 issued US Patents to my name. I have advised and graduated eight accomplished PhD students that are currently professors, research scientists, software engineers and technical leaders in their respective fields. Over the years, as a consultant, I have designed a number of embedded system products and served as technical expert and consultant for numerous corporations in the technology sector. I am currently serving on a number of Technical Program Committees of conferences related to Embedded Systems. I am an Associate Editor of the Computer Science & Engineering section of Electronics Journal. For additional relevant background, I direct your attention to my Curriculum Vitae attached as Appendix A.

II. LEGAL FRAMEWORK

8. I am a technical expert and do not offer any legal opinions. However, counsel has informed me as to certain legal principles regarding patentability and

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