

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ROKU, INC.,
Petitioner,

v.

UNIVERSAL ELECTRONICS INC.,
Patent Owner.

Case IPR2019-01615
U.S. Patent 9,716,853

**DECLARATION OF DR. DON TURNBULL
IN SUPPORT OF PATENT OWNER UNIVERSAL ELECTRONICS INC.'S
PRELIMINARY RESPONSE TO PETITION FOR *INTER PARTES* REVIEW OF
UNITED STATES PATENT NO. 9,716,853**

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I, Don Turnbull, declare that:

I. INTRODUCTION

1. I have been retained by Universal Electronics Inc. (to whom I will refer to as either Patent Owner or “UEI”) for this *inter partes* review proceeding (which I may refer to a times as an “IPR”).

2. I understand that this IPR proceeding involves U.S. Patent No. 9,716,853, which I may refer to as just “the ’853 patent” for convenience. I understand that this IPR challenges Claims 1, 3, 5, and 7 of the ’853 patent.

3. I understand that the ’853 patent is assigned to UEI.

4. I understand that in this proceeding, Roku, Inc. (to whom I may refer to as the Petitioner) filed a Petition to institute a review of Claims 1, 3, 5, and 7 of the ’853 patent.

5. I have been asked to provide an independent analysis of the ’853 patent in view of the asserted prior art publications cited in the Petition and to provide my opinions regarding the assertions in the Petition and the opinions of Dr. Samuel H. Russ. This declaration is limited to those issues.

6. I am not, and never have been, an employee of UEI. I am not receiving compensation for this declaration beyond my normal hourly fees based on my time actually spent analyzing and documenting my opinions herein on the ’853 patent, the asserted prior art publications cited in this declaration and in the Petition, and the issues related thereto. My compensation is not related to the outcome of this proceeding, and I will not receive any additional compensation based on the outcome of any IPR or other proceeding involving the ’853 patent.

II. QUALIFICATIONS

7. My qualifications can be found in my curriculum vitae (or “CV”), which includes a summary of my professional and educational background, and which is attached this declaration as Exhibit 1.

8. I am an expert in software design and architecture, including networked systems, with 30 years of research and development experience. My research and development endeavors cover various technologies related to multimedia information systems; human-computer interaction; interface design; user behavioral collection, analysis and modeling; and multimedia content organization and display, some of which are subject to patent and trade-secret protection.

9. My current work centers generally on software research and design in the areas of information systems. This work includes consumer and enterprise applications such as content management systems, mobile technologies, recommendation systems, personalization, analytics applications, search tools and eCommerce platforms. I also research and invent solutions related to data mining and data science, collecting network and device usage data, software architecture and interaction design.

10. I am involved in helping software companies, from small startups to large corporations, create new technologies and applications. To advise these companies, I research and monitor academic and industry technology developments to keep up-to-date regarding advances in the field. I am also aware of the history of software development from my professional and academic experience over the past 30 plus years.

11. Academically, I received a B.A. in General Studies (in “Knowledge Engineering,” i.e., computer science, cognitive psychology, and philosophy) from The University of Texas at Arlington in 1988. In 1995, I earned an M.S. in Information Design and Technology from the Georgia Institute of Technology where my concentration was on Internet and Web systems in

their very early days with a focus on interactive multimedia systems and interfaces. My work at Georgia Tech included creating digital media, researching Web server technology, building Web sites, designing Web-based content management systems, content management methodologies, and information retrieval systems. In 2002, I received a Ph.D. in Information Studies from the University of Toronto where my research centered on information systems user behavior data collection, analysis and recommendation algorithm.

12. From 2002-2009, I was an Assistant Professor at the School of Information at The University of Texas at Austin where I created and taught a variety of graduate-level courses including: Information Architecture and Web Design; Web Information Retrieval, Evaluation & Design; the Semantic Web; Information System Analytics; and Web Information System Design and Knowledge Management Systems. As faculty, principal investigator, and research team director, my areas of exploration included designing information system interfaces and architectures; large-scale data mining and algorithms (including Web use data for personalization); techniques for interface design for multimedia access; mobile interaction techniques; Web content classification; and the design of Web search engines, as well as studying their use.

13. While an Assistant Professor, I formed and managed a number of research projects. These projects included information architecture and design for multimedia Web pages and Web sites; a survey of the history of technologies in Web browsers (including protocols, extensions and scripting functionality); a multimedia content classification system; and a set of methods for content analysis and topic distillation. I also advised graduate students and coordinated information technology research and development including Semantic Web applications, mobile information system prototypes and server architectures, user understanding

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