

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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APPLE, INC.

Petitioner

v.

MEMORYWEB, LLC

Patent Owner

Patent No. 9,552,376

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*Inter Partes* Review No. IPR2022-00032

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**DECLARATION OF RAJEEV SURATI, PH.D**

I, Rajeev Surati, Ph.D., declare as follows:

1. I make this declaration based upon my own personal knowledge and, if called upon to testify, would testify competently to the matters stated herein.
2. I have been retained on behalf of MemoryWeb, LLC, (“MemoryWeb” or “Patent Owner”) as an independent expert consultant to provide this declaration concerning the technical subject matter relevant to U.S. Patent No. 9,552,376 (“the ‘376 patent”) in connection with an *inter partes* review (“IPR”) petition filed by Apple, Inc. (“Petitioner”).
3. I am being compensated at my standard hourly rate of \$550 per hour for the time I spend on this matter. My compensation is not based on the content of my opinions or the resolution of this matter, and I have no other interest in this proceeding.
4. In this declaration, I offer my expert opinion regarding the technical subject matter of claims 1-12 of the ‘376 patent. Specifically, I have considered whether the challenged claims are valid under 35 U.S.C. § 103. The substance and bases of my opinions appear below.

## I. BACKGROUND AND QUALIFICATIONS

5. In formulating my opinions, I have relied on my knowledge, training, and experience in the relevant field, which I will summarize briefly here. In addition, my *curriculum vitae* (CV) is attached to this declaration.

6. I hold a Doctor of Philosophy in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology (awarded in 1999) with a Grade Point Average of 5.0/5.0. I obtained a Master of Science in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology (awarded in 1995) with a Grade Point Average of 5.0/5.0. I have a Bachelor of Science in Electrical Engineering from the Massachusetts Institute of Technology (awarded 1992) and graduated with a Grade Point Average of 4.9/5.0.

7. My Ph.D. thesis was entitled “Scalable Self-Calibrating Technology for Large Scale Displays.” My Master's thesis was entitled “Practical Partial Evaluation.” My Undergraduate thesis, which I received the MIT EECS’s William A. Martin thesis prize for best undergraduate thesis, was entitled “A Parallelizing Compiler based on Partial Evaluation.” Lastly, I was awarded the highly selective Department of Energy’s Computational Science Fellowship in 1995, which funded my Ph.D. studies.

8. Between 1989 and 1999 I was employed as a researcher/programmer at the MIT Artificial Intelligence Lab. At the lab, I worked for Thomas F. Knight

Jr., Ph.D. He is one of the noted inventors of the first bit-mapped displays for computers, a core programmer on the ITS (intelligent time-sharing operating system), creator of several innovations in VLSI, and most recently noted as being one of the grandfathers of synthetic biology. I also worked for Professor Anant Agarwal on parallel computing and Professors Hal Abelson and Gerald J. Sussman on parallel and scientific computing.

9. In 1996, I began working on a Ph.D. thesis related to the display of multimedia across large displays. My Ph.D. thesis system was a special kind of display allowing one to create ultra-high-resolution displays composed of multiple projectors tiled with a slight overlap. A camera-based feedback system is used to create an inverse map to drive the system such that a person would only see a continuous, seamless display with no bezel or overlap. What content and how to drive it onto the display was a topic I became familiar with. Also, at this time, several interactive TV projects were going on at MIT, which I had exposure to from this vantage, especially concerning the idea that these large displays would be in the living rooms of the future. Thus, I became familiar with content encoding/decoding, user interfaces for driving large displays, multimedia content storage, high-resolution imagery, networks, recording, GPUs, storage of content, etc.

10. In 2002, MIT was awarded U.S. Patent 6,456,339, entitled “Super-resolution Display,” for my Ph.D. work. Today this technology is better known as automatic calibration for projection mapping. My experience, along with a patent I developed and licensed based on my Ph.D. thesis, were used to create a new startup company called Scalable Display Technologies that works with a variety of Pro AV display companies’ products.

11. While at MIT pursuing my doctorate, I started a company called Flash Communications in 1997, which invented an instant messaging platform focused on enterprise needs. It had its basis from my having observed the popularity at MIT of the Zephyr Instant Messaging Service from 1988 onwards. Given this enterprise focus, Microsoft soon acquired the company in 1998. We built both a client and server product, and the basic protocol we invented became the basis of the well-known XMPP protocol that was widely used in the mid-2000s among instant messaging providers. I worked on developing both the client and server products and particularly dealt with many, if not all, of the issues one might have to face when implementing contact lists.

12. Upon graduation, I joined Microsoft (as was required by Microsoft in the acquisition of Flash Communications) and worked on both client and server technologies related to instant messaging, covering both the Microsoft Exchange

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