
IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMAZON WEB SERVICES, INC.
AND AMAZON.COM SERVICES LLC,

Petitioners

- vs. -

ZENTIAN LIMITED

Patent Owner

Patent No. 10,971,140

Issued: April 6, 2021

Inventor: Mark Catchpole

Title: SPEECH RECOGNITION CIRCUIT USING PARALLEL PROCESSORS

Inter Partes Review No. IPR2023-01197

**DECLARATION OF LES ATLAS, PH.D. IN SUPPORT OF
PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 10,971,140**

Mail Stop Patent Board
Patent Trial and Appeal Board
P.O. Box 1450
Alexandria, VA 22313-1450

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I, Les Atlas, Ph.D., hereby declare as follows:

I. INTRODUCTION

1. My name is Les Atlas. I am at least eighteen years of age. I have personal knowledge of and am competent to testify as to the facts and opinions herein.

2. I have been retained by counsel for Petitioners Amazon.com Services LLC and Amazon Web Services, Inc. (collectively, “Petitioners” or “Amazon”) to provide my opinion about the patentability of claims 1–8 (collectively, the “Challenged Claims”) of U.S. Patent No. 10,971,140 (the “’140 Patent” (EX1001)), which I understand is assigned to Zentian Limited (“Patent Owner”). I further understand that Petitioners are seeking to join a prior proceeding brought by Apple, Inc. (“Apple”). I understand that Petitioners, like Apple, are requesting that the United States Patent and Trademark Office cancel claims 1–8. I submit this declaration in support of Petitioners’ request for *inter partes* review.

3. I am being compensated for my time at my usual consulting rate of \$950 per hour. Other than this consulting engagement, I have no financial interest in or professional relationship with Petitioners, nor is my compensation is dependent in any way upon the outcome of, or my testimony in, the present *inter partes* review or any related litigation proceeding. I have no financial interest in or professional

relationship with Patent Owner. I similarly have no financial interest in the challenged patent and have had no contact with any named inventor.

II. QUALIFICATIONS

4. My qualifications for forming the opinions set forth in this Declaration are summarized here and include my educational background, career history, publications, and other relevant qualifications. My full *curriculum vitae* is attached as Attachment A to this Declaration, and includes my detailed employment background, professional experience, and list of publications.

5. My academic credentials include a B.S. in Electrical Engineering from the University of Wisconsin in 1977 and an M.S. and a Ph.D. in Electrical Engineering from Stanford University in 1978 and 1983, respectively. I was also a part-time member of the technical staff at SRI International from February 1982 to November 1983, working on large vocabulary speech recognition systems. I am a Life Fellow of the Institute of Electrical and Electronics Engineers (IEEE) and have been and remain active in the fields of electrical engineering, hearing, and speech science as a university faculty educator and researcher. My work and impact in hearing research go back 40 years when I designed the world's first portable speech processor for cochlear implants. I then also worked on the first real-time implementation of the Linear Predictive Coding (LPC-10) speech coding standard. This then-new technology pre-dated speech coding for portable processors, such as

telephones. Digital voice coding technology has evolved significantly since then and is now used in virtually all cellular phones worldwide. This speech coding technology and low bit rate music coding technologies share challenges such as sound shaping and range of amplification, wideband and extended bandwidth with portability. Both have external processors where sounds are conditioned, often with parameters carefully chosen to give listeners the impression of natural pitch and overall broadband transmission of the audio signal.

6. More recently, I have addressed the lack of rich music perception and challenges for speech understanding and recognition with noisy backgrounds. In 2012, I was awarded a Bloedel Scholar Award, given out by the Bloedel Speech and Hearing Research Institute, for my work in speech recognition and hearing loss. I also published a paper describing my decades of more theoretic work in the theory of time-frequency analysis. My work in speech recognition resulted in my election to the high level of Fellow of the IEEE “[f]or contributions to time-varying spectral analysis and acoustical signal processing.” My work was also used to help modernize music coding for most listeners worldwide. For my coherent modulation approach, I received the 2003 Fulbright Senior Scholar Award. As part of the award, I spent six months at the Fraunhofer Institute in Germany and then three months in Cambridge, England. I also was invited to give a plenary tutorial at the annual top

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