**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION**

WAG ACQUISITION, LLC, Plaintiff, v. AMAZON.COM, INC., AMAZON WEB SERVICES, INC., and AMAZON.COM SERVICES LLC, Defendants.	Civil Action No. 6:21-cv-000815-ADA
WAG ACQUISITION, L.L.C., Plaintiff, vs. GOOGLE LLC and YOUTUBE, INC., Defendants.	Civil Action No. 6:21-cv-00816-ADA

DECLARATION OF DR. DAN SCHONFELD

I, Dan Schonfeld, Ph.D., hereby declare as follows:

1.   My name is Dan Schonfeld. I am at least eighteen years of age. I reside in Northbrook, Illinois. I have personal knowledge of and am competent to testify as to the facts and opinions herein.

2.   I have been asked by Amazon.com, Inc., Amazon Web Services, Inc., and Amazon.com Services LLC (collectively, "Amazon") and Google LLC and YouTube, Inc. (collectively, "Google") to offer opinions regarding the construction of certain terms and phrases within the claims of U.S. Patent Nos. 9,729,594 (the "'594 patent"), 9,742,824 (the "'824 patent"), and 9,762,636 (the "'636 patent") (collectively the "Asserted Patents"). I have also been asked to offer an opinion regarding the definiteness of certain terms.

I.   **QUALIFICATIONS**

3.   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 **Exhibit A** to this Declaration, and includes my detailed employment background, professional experience, and list of publications.

4.   I received my B.S. degree in Electrical Engineering and Computer Science from the University of California, Berkeley, California, in 1986 with a concentration on Computer Engineering / Systems Engineering. I received my M.S. degree in Electrical and Computer Engineering from The Johns Hopkins University, Baltimore, Maryland, in 1988 with a concentration on Speech Processing / Biomedical Signal Processing. I received my Ph.D. degree in Electrical and Computer Engineering from The Johns Hopkins University, Baltimore, Maryland, in 1990 with a concentration on Nonlinear Signal Processing / Image Analysis.

5.   In August 1990, I joined the Department of Electrical Engineering and Computer Science at the University of Illinois, Chicago, Illinois, where I am a tenured Professor in the

Departments of Electrical and Computer Engineering, Computer Science, and Bioengineering. Before I joined the University of Illinois at Chicago, I served as an instructor in the Department of Electrical and Computer Engineering at The Johns Hopkins University, Baltimore, Maryland.

6.   At the University of Illinois at Chicago, I have served as the Director of the University-Industry Engineering Research Center (UIERC), formerly the Manufacturing Research Center (MRC). I am also Co-Director of the Multimedia Communications Laboratory (MCL) and a member of the Signal and Image Research Laboratory (SIRL).

7.   Over the past few decades, I have also served as a visiting professor in (a) the Advanced Analytics Institute (AAI) at the University of Technology, Sydney, Australia, (b) the Department of Information Engineering and Computer Science ("DISI") at the University of Trento, Italy, (c) the School of Computer Engineering at the Nanyang Technological University, Singapore, and (d) the Department of Electrical Engineering—Systems at Tel-Aviv University, Israel.

8.   I have been elected Fellow of the Institute of Electrical and Electronics Engineers ("IEEE") "for contributions to image and video analysis" as well as Fellow of the International Society for Optics and Photonics ("SPIE") "for specific achievements in morphological image processing and video analysis." I have also been elected University Scholar of the University of Illinois. A complete list of my publications, professional activities, and honors that I have received is fully set forth in my *curriculum vitae*, attached hereto as **Exhibit A**.

9.   I have previously served as Editor-in-Chief and Deputy Editor-in-Chief of the IEEE Transactions on Circuits and Systems for Video Technology. I have also previously served as Area Editor for special issues of the IEEE Signal Processing Magazine. I have served as Associate

Editor of the IEEE Transactions on Image Processing (on image and video storage, retrieval and analysis), Associate Editor of the IEEE Transactions on Circuits and Systems for Video Technology (on video analysis), Associate Editor of the IEEE Transactions on Signal Processing (on multidimensional signal processing and multimedia signal processing), and Associate Editor of the IEEE Transactions on Image Processing (on nonlinear filtering). I have also served on the editorial board of the IEEE Signal Processing Magazine, EURASIP Journal of Image and Video Processing, Research Letters in Signal Processing, and Bentham Science Publishers, Ltd.'s "Recent Patents on Computer Science" and "Recent Patents on Electrical Engineering" publications.   I have served as guest editor of numerous special issues in various journal publications in the area of multimedia systems.

10.   I have previously served on the Conference Board of the IEEE Signal Processing Society.   I have previously served as Technical Program Chair of the IEEE International Conference on Acoustics, Speech, and Signal Processing ("ICASSP") 2018 as well as Program Chair of the IEEE Conference on Visual Communications and Image Processing ("VCIP") 2015. I have also previously served as General Co-Chair of the Workshop on Big Data in 3D Computer Vision 2013 and the IEEE International Conference on Multimedia and Expo ("ICME") 2012. I have served as Chair of the IEEE Workshop on Video Mining 2008 and the SPIE Conference on Visual Communications and Image Processing 2007.   I have also served on the organizing committees of various conferences including the IEEE International Conference on Image Processing 1998, 2012, and 2020, IEEE/SPIE International Conference on Visual Communications and Image Processing (VCIP) 2010, 2017, and IEEE Workshop on Nonlinear Signal and Image Processing (NSIP) 1997. I was an organizer of the Thematic Symposium on

Multimedia Search and Retrieval at the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2009.

11.   I have authored and co-authored over 250 technical papers for various journals and conferences.   I was author of a book chapter, entitled: "Image and video communication networks," and later editions entitled: "Video communication networks." I was co-author (with Carlo Giulietti and Rashid Ansari) of a paper that won the Best Paper Award at the ACM Multimedia Workshop on Advanced Video Streaming Techniques for Peer-to-Peer Networks and Social Networking 2010. I was also co-author (with Junlan Yang) of a paper that won the Best Student Paper Award at the IEEE International Conference on Image Processing 2007. I was also co-author (with Wei Qu) of a paper that won the Best Student Paper Award at the IEEE International Conference on Image Processing 2006.   I was also co-author (with Nidhal Bouaynaya) of a paper that won the Best Student Paper Award in Visual Communications and Image Processing 2006.   In addition, many of my publications relate to the broad topic of multimedia systems, which includes audio, image, and video processing. My publications in the area of multimedia systems dates back to 1988. A list of my publications within the past ten years is included in **Exhibit A**.

12.   I was the keynote speaker at the International Conference on Wireless Communications and Signal Processing (WCSP), Yangzhou, China, in 2016, and the International Conference on Intelligent Control and Information Processing (ICICIP) and International Conference on Brain Inspired Cognitive Systems (BICS), Beijing, China, in 2013. Further, I was a plenary speaker at the IEEE/IET International Conference on Audio, Language and Image Processing (ICALIP), Shanghai, China, in 2010, and at the IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS), Genoa, Italy, in 2009. I was also a

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