

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SNAP INC.,

Petitioner,

v.

PLAYVUU, INC.,

Patent Owner.

CASE NO.: IPR2023-00848
U.S. PATENT NO. 10,931,911

DECLARATION OF MICHAEL I. SHAMOS, PH.D.

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I. INTRODUCTION

1. My name is Michael Shamos. I have been retained as an expert witness by Patent Owner Playvuu, Inc. (“Playvuu” or “Patent Owner”) for this Petition for *Inter Partes* Review (“IPR2023-00848” or “Pet.”) of U.S. Patent No. 10,931,911 (the “’911 Patent”), the Petition being filed by Snap Inc. (“Snap” or “Petitioner”).

2. In the Petition, I understand that Petitioner is challenging the validity of Claims 1-11 (the “Challenged Claims”) of the ’911 Patent (EX. 1001), constituting all the claims of the Patent, on the grounds of obviousness.

3. I have been asked to consider the documents relied upon by Petitioner in its various grounds of obviousness and their similarities or differences from the documents that were considered by the patent examiner during prosecution of the ’911 Patent. I was also asked to review and comment on several technical statements made by Petitioner in the Petition and by its expert, Dr. Jeremy Cooperstock, in the “Declaration of Jeremy Cooperstock, Ph.D.” in Support of Petition for *Inter Partes* Review, dated May 26, 2023 (“Cooperstock Declaration,” EX. 1003).

4. This Declaration contains statements of my opinions formed in this case to date and the bases and reasons for those opinions. I may offer additional opinions based on further review of materials in this case, including opinions and/or testimony of other expert witnesses.

II. QUALIFICATIONS

5. This section summarizes my educational background, career history, publications, and other relevant qualifications. My curriculum vitae is attached as Patent Owner's Exhibit 2002, which includes my detailed employment background, professional experience, and list of publications.

6. I have an A.B. degree from Princeton University in Physics, an M.A. degree from Vassar College in Physics, an M.S. degree from American University in Technology of Management, an M.S. degree from Yale University in Computer Science, an M. Phil. from Yale University in Computer Science, a Ph.D. from Yale University in Computer Science, and a J.D. degree from Duquesne University.

7. I currently hold the title of Distinguished Career Professor in the School of Computer Science at Carnegie Mellon University in Pittsburgh, Pennsylvania. I am a member of two departments in that School, the Software and Societal Systems Department and the Language Technologies Institute. I was a founder and Co-Director of the Institute for eCommerce at Carnegie Mellon from 1998-2004 and from 2004-2018 have been Director of the eBusiness Technology graduate program in the Carnegie Mellon University School of Computer Science. Since 2018, I have been Director of the M.S. in Artificial Intelligence and Innovation degree program at Carnegie Mellon.

8. I have taught graduate courses at Carnegie Mellon in Electronic Commerce, including eCommerce Technology, Electronic Payment Systems, Electronic Voting, Internet of Things, Ubiquitous Computing, Electronic Payment Systems and eCommerce Law and Regulation, as well as Analysis of Algorithms. Since 2007, I have taught an annual course in Law of Computer Technology. I also currently teach Artificial Intelligence and Future Markets.

9. I am the author and lecturer in a 24-hour video course on Internet protocols and have taught computer networking, wireless communication, and Internet architecture since 1999.

10. Since 2001, I have been a Visiting Professor at the University of Hong Kong, where I teach an annual course in Electronic Payment Systems. This is one of only a handful of graduate courses taught on this subject in the world.

11. I was the Director of Carnegie Mellon's graduate degree program in eBusiness Technology from 1999-2018 and am now a faculty member in the Privacy Engineering degree program at Carnegie Mellon. My course on Law of Computer Technology is required for all students in that program. My principal role currently is as Director of the graduate program in Artificial Intelligence and Innovation.

12. I am a named inventor on the following six issued patents relating to electronic commerce: U.S. Patent Nos. 7,330,839; 7,421,278; 7,747,465; 8,195,197; 8,280,773; and 9,465,299.

13. From 1979-1987, I was the founder and president of two computer software development companies in Pittsburgh, Pennsylvania, Unilogic, Ltd. and Lexeme Corporation.

14. I am an attorney admitted to practice in Pennsylvania and have been admitted to the Bar of the U.S. Patent and Trademark Office since 1981. I have been asked to render opinions in this declaration as a technical expert. I have not been asked to offer any opinions on patent law in this proceeding.

15. I have previously served as an expert in over 330 cases concerning computer technology.

III. COMPENSATION

16. I am being compensated for my work in this case at the rate of \$600 per hour. I am also reimbursed for all reasonable expenses that I incur during the course of this case. My compensation does not depend upon the results of my analysis or the substance of my testimony, nor does my compensation depend on the outcome of this or any related proceeding. I have no personal interest in the outcome of this

matter. I have no financial interest in Patent Owner or affiliation with any of the real parties in interest, the Patent Owner, or the named inventor of the '911 Patent.

17. The statements made and opinions provided in this Declaration are based on my own personal knowledge and, if called as a witness, I could and would testify in a manner consistent with this Declaration.

18. In this Declaration, all emphasis in boldface has been added unless otherwise noted.

IV. MATERIALS CONSIDERED

19. The following lists the documents I considered in forming the opinions expressed in this Declaration:

Exhibit No.	Description
	Petition for Inter Partes Review IPR2023-00848
EX 1001	U.S. Patent No. 10,931,911 (the "'911 Patent")
EX 1002	File History of U.S. Patent No. 10,931,911
EX 1003	Declaration of Jeremy Cooperstock, Ph.D.
EX 1004	Cohen, et al., U.S. Patent Application Publication No. 2009/0164034
EX 1005	Chu, U.S. Patent No. 6,086,380
EX 1006	Sherman, et al., U.S. Patent Application Publication No. 2003/0164924
EX 1007	Joslin, U.S. Patent No. 7,324,166

Exhibit No.	Description
EX 1008	Lei, et al., U.S. Patent Application Publication No. 2008/0285859
EX 1013	Gentile, U.S. Patent Application Publication No. 2010/0027961
EX 1014	Austerberry, Selected Chapters from THE TECHNOLOGY OF VIDEO AND AUDIO STREAMING, Focal Press, 2002
EX 1032	Crawford, U.S. Patent Application Publication No. 2011/0053688
EX 1034	Maigret, Patent Application Publication No. 2008/0109306

20. I have also relied on my education, skill, training, and experience in the relevant fields of technology in forming my opinions. I have further considered the viewpoint of a person of ordinary skill in the art (“POSITA”) as of the time of the inventions of the ’911 Patent. I provide my opinion as to the proper level of skill of a POSITA in Section VII of this Declaration.

21. I reserve the right to supplement my opinions as expressed in this Declaration to address any new information obtained in the course of this proceeding, or based on any new positions taken by Petitioner.

V. SUMMARY OF MY OPINIONS

22. It is my understanding that the following table summarizes the Grounds of challenge to the Challenged Claims raised in the Petition:

Grounds	Statutory Basis	References	Challenged Claims
1	35 U.S.C. §103	Cohen in view of Chu, Sherman, and Joslin	1-10
2	35 U.S.C. §103	Cohen in view of Chu, Sherman, Joslin, and Lei	11
3	35 U.S.C. §103	Cohen in view of Chu, Sherman, Joslin, and Austerberry	1-10
4	35 U.S.C. §103	Cohen in view of Chu, Sherman, Joslin, Lei, and Austerberry	11

23. After a review of the alleged prior art asserted by Petitioner and the Cooperstock Declaration, it is my opinion that alleged prior asserted by the Petitioner is cumulative to, or less relevant than the prior art considered by the patent examiner during prosecution of the '911 Patent. My opinions, and the bases therefore, are detailed throughout this Declaration.

VI. LEGAL PRINCIPLES

24. Counsel for Patent Owner has informed me of the legal principles that apply in this proceeding.

25. I have been informed that Petitioner has the burden to prove that the claims challenged in the Petition are not patentable by a preponderance of the

evidence, which I understand to be just enough evidence to make it more likely than not that Petitioner's argument is correct.

26. A claim is invalid as obvious under 35 U.S.C. § 103 if the differences between the subject matter sought to be patented and the prior art are such that the subject matter of the claim as a whole would have been obvious at the time of the invention to a person having ordinary skill in the art to which the invention pertains. I have been informed that the following factors are used to determine whether or not the claimed subject matter would have been obvious: (i) the scope and content of the prior art; (ii) the differences, if any, between the prior art and the claimed invention; (iii) the level of ordinary skill in the field of the invention; and (iv) any relevant objective considerations of non-obviousness.

27. A party asserting obviousness based on a combination of prior art references must demonstrate that one of ordinary skill in the art would have been motivated to combine the teachings of those references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so. It is my understanding that it is not enough to show that one skilled in the art could combine elements of multiple references, but instead there must be some reason that would have prompted a person of ordinary skill in the art to combine the elements in the way the claimed invention does. I understand that

there must be some reasoned explanation as to why one of ordinary skill in the art would combine the references.

28. I understand that obviousness may be shown by considering more than one item of prior art and by considering the knowledge of a person of ordinary skill in the art, and that obviousness may be based on various rationales including:

(i) combining prior art elements according to known methods to yield predictable results; (ii) simple substitution of one known element for another to obtain predictable results; (iii) use of known techniques to improve similar devices in the same way; (iv) applying a known technique to a known device ready for improvement to yield predictable results; (v) “obvious to try” – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; (vi) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art; and (vii) some teaching, suggestion, or motivation in the prior that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

29. A combination of references would not have been obvious if the alleged modification(s) to be made to the reference(s) would have been inconsistent with the

reference's stated goals or method of operation or would have rendered the combination inoperable for its intended purpose. I further understand that for something to have been obvious, the party asserting obviousness must explain why a POSITA would have selected components for combination in the manner claimed.

30. I further understand that a claim is not obvious over a combination of prior art references if such references "teach away" from the claimed combination, if there is no motivation to combine such references, or if the combination would lead to waste and inefficiencies not present in one or more of the references in isolation.

31. It is my further understanding that obviousness cannot be based on a hindsight combination of components selected from prior art references. For example, the challenged patent itself cannot be used as a basis for combining prior art references absent such a teaching in the patent. I also understand that an invention would not have been obvious simply because all of the elements of the invention may have been known separately in the prior art.

VII. LEVEL OF ORDINARY SKILL IN THE ART

32. I understand that the hypothetical POSITA is considered to have the normal skills and knowledge of a person in a certain technical field, as of the time of the invention at issue. I understand that factors that may be considered in

determining the level of ordinary skill in the art include: (1) the types of problems encountered in the art; (2) the prior art solutions to those problems; (3) rapidity with which innovations are made; (4) the sophistication of the technology; and (5) the education level of active workers in the field. I also understand that “the person of ordinary skill” is a hypothetical person who is presumed to be aware of the universe of available prior art. Therefore, no such person actually exists.

33. Petitioner has proposed that a POSITA for the '911 Patent would have had “at least a bachelor’s or equivalent degree in computer engineering, computer science, or related field, and 2-3 years of experience in the research, design, or development of audio and video production, editing, network storage, and streaming systems and related hardware, software, and firmware, or equivalent experience. A person with less education but more relevant experience, or more education and less experience, may also qualify.” (Pet. at 25-26; EX 1003 at ¶¶ 187-190.)

34. I believe that a more appropriate characterization of the level of ordinary skill in the art would be: “A POSITA would have a bachelor’s degree in computer science, electrical engineering, or a related discipline, or equivalent work experience, and, in addition, approximately two years of work experience to include familiarity with audio and video content creation, databases, user interfaces, and client/server network communication. Lack of work experience could be remedied

by additional education, and vice versa.” I believe that this characterization is similar to Petitioner’s intended characterization, and it is the one I have adopted for purposes of this Declaration.

35. The opinions I express herein are from the viewpoint of such a POSITA as of July 15, 2010, the earliest priority date for the ’911 Patent.

VIII. PETITIONER’S CITED ART IS CUMULATIVE TO OR LESS RELEVANT THAN PRIOR ART CONSIDERED DURING PROSECUTION OF THE ’911 PATENT

36. The prior art cited by the Petitioner is the same as, and substantially similar to the prior art already considered by the Examiner during prosecution of the ’911 Patent. The primary reference relied on in each of the four grounds raised in the Petition is Cohen, which was cited and fully considered by the Examiner. *See* Ex. 1002 at 81. The remaining references cited in the petition have no material differences to the prior art evaluated during prosecution of the ’911 Patent.

A. Prior Art Considered During Prosecution

37. During prosecution of the ’911 Patent, claims 1-10 were rejected as obvious over Cohen in view of Gentile, US 2010/0027961, further in view of Maigret *et al.*, US 2008/0109306. Final rejection dated June 10, 2020 – EX1002, pp. 0078-0091. The patent examiner appreciated that there were differences between Cohen and the then pending claims. The claims pending at that time were

essentially the same as the '911 Patent claims, the only difference being the addition of the word “audio” in element 1[i]. The patent examiner stated:

Cohen fails to explicitly disclose presenting the user with a selection of visual media content for use as a background, wherein upon selecting an instance of pre-recorded visual media content from the selection, the user is presented with an interface to selectively edit the instance of pre-recorded visual media content;

generating recorded content based on the recording session by compositing video captured during the recording session with the instance of pre-recorded visual media content, such that the video captured during the recording session is selectively made transparent to reveal the instance of pre-recorded visual media content;

EX1002, pg. 0082.

38. The examiner relied on Gentile as disclosing “presenting the user with a selection of visual media content for use as a background, wherein upon selecting an instance of pre-recorded visual media content from the selection, the user is presented with an interface to selectively edit the instance of pre-recorded visual media content.” EX1002, pg. 0082. The examiner further stated that Gentile discloses “generating recorded content based on the recording session by compositing video captured during the recording session with the instance of pre-

recorded visual media content, such that the video captured during the recording session is selectively made transparent to reveal the instance of pre-recorded visual media content.” *Id.* The examiner concluded that it would have been obvious to modify Cohen’s system to include the features of Gentile to allow “a more seamless integration with existing scenes in video compositing.” *Id.*

39. The patent examiner also relied on Maigret as disclosing “receiving a request to publish the recorded content; in response to the request to publish, processing and encoding individual components of the recorded content to create a streamable video; and publishing the streamable video by copying the streamable video to a media server.” EX1002, pg. 0083. The examiner concluded that it would have been obvious to modify Cohen’s system to include the features of Maigret to “improve the distribution system for media content.” *Id.*

40. The patent examiner also addressed the feature of independent claim 11 (then pending claim 12) reciting detecting user movement in the video captured during the recording session, relying on Crawford, U.S. 2011/0053688. The examiner stated that Crawford discloses “detecting user movement in the video captured during the recording session and representing that movement by a trailing light (*trail of flames or sparks*).” EX1002 at pg. 0089, emphasis in original. The examiner concluded that it would have been obvious to modify Cohen’s system to

include the features of Crawford to “enhance [the] object in media modification.”

Id.

B. Prior Art Cited by Petitioner and Similarity to Prior Art Considered During Prosecution

41. Based on my review of the grounds of unpatentability, Petitioner has just replaced Gentile, Maigret, and Crawford, with Chu, Sherman, Joslin, Lei, and Austerberry, all of which contain essentially the same disclosures, but in some instances are further afield from Cohen’s system. Petitioner relies on Chu as disclosing:

Chu teaches a “personalized karaoke recording studio” for users to audio- and video-record themselves singing over user-selected karaoke songs in front of user-selectable backgrounds (EX1005, 2:36-48; 3:9-17, 3:59-4:2, 5:1-32, 12:49-64), and composite the background and users’ performance using chroma-key technology (3:19-58, 5:34-48). After recording, users may review the videos, add titles/messages, and permanently save them as, *e.g.*, MPEG files via MPEG converter 137.”

Petition at pg. 20.

42. Based on my review of Chu and the prior art before the patent examiner during prosecution of the ’911 Patent, Gentile discloses everything Petitioner contends Chu discloses, including user-selectable backgrounds, (multiple disclosures), compositing the video recorded with the selected video using chroma-

key technology, (EX 1013 at paras. [0059], [0075], and [0163], and converting them to flash video file, MPEG, JPEG, and/or other file types for viewing at a display or submission to a content sharing website (EX 1013 at para. [0090]). Gentile is more relevant than Chu by disclosing converting the recorded content to create a streamable video, essentially the same subject matter that Petitioner relies on Sherman as disclosing, as discussed below.

43. Petitioner relies on Sherman as disclosing:

Sherman teaches a “video karaoke system” that “allow[s] dubbing an actor’s voice” in a video clip. EX1006, Abstract, ¶[0002], ¶[0024]. *Sherman* provides user interfaces for user selection of a movie clip to record over. EX1006, ¶[0014]. *Sherman* teaches: (i) segmenting/replacing the clip’s static portions with another background or video; and (ii) video of a user may be captured and used to replace an actor in the clip. EX1006, ¶[0024]. The resulting video clip can be saved and edited. EX1006, ¶[0017]. The file components can be saved together as, *e.g.*, an MPEG, for distribution. EX1006, ¶[0023]. *Sherman* teaches using clips for web-based invitations. EX1006, ¶[0038].

Petition at 21.

44. Gentile discloses the same subject matter Petitioner contends Sherman discloses. Gentile discloses providing user interfaces for user selection of a movie

clip to record over (“For instance, the washed media content **104** of the database **101** can comprise one or more video clips, such as movie clips comprising video and/or audio content, usable in the background of a combined video image.” Gentile at para. [0050]). Gentile discloses using a movie clip and replacing an original actor. Abstract. Gentile discloses recreating the background of the movie clip after removing a character, and replacing a movie clip’s background (*i.e.*, static portion) with another background or video. *Id.* at paras. [0010], [0011], [0036]. Gentile discloses editing the video (para. [0057]), and converting the edited video files to a flash video file, MPEG, JPEG, and/or other file types for viewing at a display or submission to a content sharing website (para. [0090]). Gentile therefore discloses the same subject matter relied upon by Petitioner as being disclosed by both Chu and Sherman, and would in my opinion be more relevant to the Challenged Claims than either Chu or Sherman alone, or in combination with one another.

45. The patent examiner also relied on Maigret as disclosing “receiving a request to publish the recorded content; in response to the request to publish, processing and encoding individual components of the recorded content to create a streamable video; and publishing the streamable video by copying the streamable video to a media server.” EX1002 at pg. 0083. Maigret therefore discloses the same subject matter relied upon by Petitioner as being disclosed by Sherman.

46. Petitioner also relies on Joslin as disclosing:

Joslin teaches a system that “inserts a participant realistically into familiar background media” (e.g., a movie) to create new video content using chroma-key techniques. EX1007, Abstract, 1:61-67. The background media is user-selected from a “digital library.” EX1007, 2:51-59. The “images of a live participant are inserted, real time, as an actor” in the selected background media (EX1007, 3:45-65) and stored for viewing (EX1007, 2:39-44). The recording’s “format and resolution” may be modified “for internet video streaming, and upload[ed] to a server for later download by the participant via the internet.” EX1007, 3:36-44, 10:33-39.”

Petition at 22.

47. It is not clear from my review of Petitioner’s discussion of Joslin how Joslin’s disclosure upon which the Petitioner relies is any different from the disclosure of Chu. Regardless, the disclosures of both Joslin and Chu referenced by Petitioner is also included in Gentile. Gentile discloses inserting a participant realistically into a familiar background (e.g., a movie clip) to create a new video content using chroma-key techniques. EX 1013 at paras. [0010] – [0013], [0059], [0075], and [0163]. Gentile also discloses modifying or editing the new video (para. [0057]), and converting the edited video files to a flash video file, MPEG, JPEG, and/or other file types for viewing at a display or submission to a content sharing

website (para. [0090]). Gentile therefore discloses the same subject matter relied upon by Petitioner as being disclosed by Chu, Sherman, and Joslin, and would in my opinion be more relevant to the Challenged Claims than either Chu, Sherman, or Joslin alone, or in combination with one another. In addition, the patent examiner also relied on Maigret discloses modifying the video and encoding it to create a streamable video.

48. Petitioner relies on Lei as disclosing:

Lei teaches adding a trail line showing object movement (*e.g.*, trail lines 17 and 73 in FIG. 18) in a recorded video. EX1008, Abstract, ¶¶[0003], [0111]-[0114].

Petition at 22. Petitioner appears to rely on Lei (Grounds 2 and 4) as allegedly disclosing element [11k] of claim 11 – “detecting user movement in the video captured during the recording session and representing that movement by a trailing light.”

49. During prosecution, the patent examiner relied upon Crawford as disclosing this element. The examiner stated that Crawford “discloses detecting user movement in the video captured during the recording session and representing that movement by a trailing light (*trail of flames or sparks*) ([0054]).” EX1002 at pg. 0089, emphasis in original. Crawford discloses “a second object enhancement

image may be included in the augmentation images in the form of a trail/trailing image with the controller determining a path traveled or followed by the tracked game object relative to the game surface and then positions the trail image to be mapped to the position of the traveled path (e.g., a series of sparks or flame following a rolling flame ball image projected upon a ball or other game piece).” EX 1032 at para. [0011].

50. Both Lei and Crawford disclose systems to modify and edit video. Crawford relates to interactive video entertainment (e.g., games) systems, and Lei relates to intelligent video surveillance systems. Neither document is particularly relevant to the systems disclosed by Cohen, Chu, Sherman, or Joslin, but Crawford would appear closer to the disclosures of these references by at least disclosing augmenting video in the entertainment field. Lei is concerned with surveillance, and is further afield from the Crawford reference cited by the patent examiner.

51. Petitioner also relies on the disclosure of Austerberry as disclosing:

Austerberry teaches capturing audio/video, encoding it in streamable form (e.g., MPEG), and placing the encoded file on a server for streaming. EX1014, Ch. 1, 4-11, 13. *Austerberry* also teaches improving encoding processes by preprocessing the audio/video signals before encoding (e.g., by adjusting video levels, de-interlacing, cropping, and noise reduction). EX1014, 170-184. EX1003, ¶¶58-59.

Petition at 9. Gentile discloses the same subject matter as Austerberry by disclosing the use of various editing software such as FINAL CUT PRO, PHOTOSHOP, AFTER EFFECTS, ADOBE AUDITION, SOUNDTRACK PRO, and/or the like (para. [0057]), which permit the same pre-processing allegedly disclosed by Austerberry (adjusting video levels, de-interlacing, cropping, and noise reduction). Austerberry therefore is no more relevant to the '911 Patent claims than the prior art cited by the patent examiner during prosecution of the '911 Patent.

52. The documents relied upon by Petitioner are cumulative to and less relevant than the prior art already considered by the patent examiner during prosecution of the '911 Patent. Chu, Sherman, and Joslin, all teach compositing video to allow a user to appear in a background. *See* Petition at 20 (Chu teaches “composit[ing] the background and users’ performance using chroma-key technology”), at 21 (Sherman teaches “replacing the clip’s static portions with another background or video. . . video of a user may be captured and used to replace an actor in the clip”), and at 22 (Joslin teaches “insert[ing] a participant realistically into familiar background media. . . using chroma-key techniques.”).

53. This is no different from Gentile, which was cited and evaluated by the patent examiner. The patent examiner relied on Gentile as disclosing “presenting the user with a selection of visual media content for use as a background,” and

“generating recorded content based on the recording session by compositing video captured during the recording session with the instance of pre-recorded visual media content.” Ex 1002 at 82. In my opinion, Gentile is more relevant to the Challenged Claims than any of Chu, Sherman, or Joslin because it is a single document that discloses the same subject matter as the cumulative teachings of each of Chu, Sherman, and Joslin.

54. Lei is not materially different from Crawford, which was also considered by the patent examiner during prosecution of the '911 Patent. Specifically, Crawford discloses a “tracking system 524 that tracks movement and position of a game object. . .[and] generates augmentation content or images 528 that are projected by projection system 526.” EX 1032 at [0051]. Indeed, Crawford is more relevant to the Challenged Claims than is Lei because Crawford is at least concerned with entertainment, whereas Lei is a video surveillance system in which tracking movement and positioning serves a substantially different purpose.

55. Austerberry, which discusses encoding audio/video and making it streamable, is not materially different from Maigret, which also was fully considered by the patent examiner during prosecution of the '911 Patent. Maigret discloses that a media format “may be formatted in a streaming format.” EX 1034 at [0081]. Thus, Cohen, Gentile, Maigret, *and* Crawford, which were already considered by the

Examiner during prosecution of the '911 Patent, disclose the same subject matter as the prior art cited by Petitioner.

56. I note that Petitioner states that the secondary references to Chu, Sherman, Joslin, Lei, and Austerberry, are “non-cumulative,” presumably non-cumulative to the prior art cited during prosecution of the '911 Patent. *See* Petition at pp. 20, 21, 22, and 23. I could not find any further discussion other than this blanket statement regarding the differences and/or similarities between Chu, Sherman, Joslin, Lei, and Austerberry cited by Petitioner, on the one hand, and Gentile, Maigret, and Crawford cited by the patent examiner, on the other hand.

57. After each statement that the respective document is “non-cumulative,” Petitioner cites to a paragraph in its expert’s report. For example, Petitioner states on page 20 of the Petition that Chu is non-cumulative, and cites to EX 1003, ¶159 of its expert report. Petitioner repeats the same with respect to Sherman (pg. 21, referencing EX 1003 ¶166), Joslin (pg. 22, referencing EX 1003 ¶175), Lei (pg. 22, referencing EX 1003 ¶180), and Austerberry (pg. 23, referencing EX 1003 ¶184). I have reviewed these paragraphs of Dr. Cooperstock’s declaration and do not agree with his conclusory statements that the documents are non-cumulative to the prior art cited during prosecution of the '911 Patent, and note that the statements made therein are not relevant to the reasons why Petitioner is combining the prior art.

IX. CONCLUSIONS

58. Relying on my education, experience, skill, and training in the relevant field of art, and after reviewing the materials identified above, it is my opinion that the documents relied upon by Petitioner in Grounds 1-4 are cumulative to, and/or less relevant than the prior art already fully considered by the patent examiner during prosecution of the '911 Patent.

59. I hereby declare that all statements made herein of my knowledge are true, and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

60. I reserve the right to supplement my opinions in the future to respond to any arguments that Petitioner raises and to take into account new information as it becomes available to me.

61. In signing this Declaration, I understand that the Declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I acknowledge that I may be subject to cross examination in the case and that cross examination will take place within the United States. If cross examination is required of me, I will appear for cross

examination within the United States during the time allotted for cross examination.

Executed this 14th day of September, 2023 at Pittsburgh, Pennsylvania.


Michael I. Shamos, Ph.D.