UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PERFECT CORP.,

Petitioner,

v.

ZUGARA, INC.,

Patent Owner.

PTAB Case No. IPR2025-01144

Patent No. 10,482,517

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,482,517

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[1] Citation convention: Where an exhibit contains original page numbering or other indications that uniquely identifies each page in the exhibit, this petition uses those page numbers or other indications to refer to the pages in the exhibit. Where an exhibit contains original page numbering that does not clearly and uniquely identify each page in the exhibit (such as in the '517 Patent's Prosecution History, Ex.1010), or does not contain page numbering at all, unique page numbering added in the lower right corner of the exhibit will be used.

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I. INTRODUCTION

Petitioner Perfect Corp. ("Petitioner") requests *inter partes* review of claims 1-3, 6-7, 9-10, 12-15, and 18-19 of U.S. Patent No. 10,482,517 (the "'517 Patent" (Ex.1001)), assigned to Patent Owner Zugara, Inc. ("Zugara" or "PO").

II. MANDATORY NOTICES

A. Real party-in-interest

Perfect Corp. is the real party-in-interest. Out of an abundance of caution, Petitioner identifies The Estée Lauder Companies, Inc. as a customer of Perfect Corp.'s virtual-try-on technology that Zugara sued on the '517 Patent. The Estée Lauder Companies, Inc. is not a real party-in-interest. It has no corporate relationship to Petitioner, had no awareness of the preparation of this petition, and has not been, is not, and will not be involved with or participate in any part of this proceeding.

B. Related matters

Patent Owner has asserted the '517 Patent in Case Nos. 2-24-cv-00743 (E.D.Tex.), 2-24-cv-00747 (E.D.Tex.), 2-24-cv-08133 (C.D.Cal.), 2-25-cv-00180 (E.D.Tex.), and 2-25-cv-00183 (E.D.Tex.). All but the 2-25-cv-00180 and 00183 cases have been dismissed, although all parties in both of these two remaining cases have now notified the Court of settlement.

C. Counsel and service information

Lead counsel: Nicholas Thane Bauz (Reg. No. 41,604).

Back-up counsel: Matthew C. Bernstein (*pro hac vice* to be requested), Han-Wei Chen (Reg No. 75,350)).

These attorneys can be reached by mail at Bernstein IP Strategy, 4653 Carmel Mountain Rd., Suite 308 #AA 195, San Diego, California 92130; by phone at (619) 254-3273.

Petitioner consents to electronic service. All services and communications to the attorneys listed above may be sent to: ptab@bernsteinipstrategy.com. A Power of Attorney is being filed concurrently.

III. REQUIREMENTS FOR *INTER PARTES* REVIEW

A. Standing

Petitioner certifies that the '517 Patent is available for IPR and that Petitioner is not barred or estopped from requesting IPR challenging claims of the '517 Patent.

B. Overview of challenge and relief requested

Pursuant to Rules 42.22(a)(1) and 42.104(b)(1)-(2), Petitioner requests cancellation of claims 1-3, 6-7, 9-10, 12-15, and 18-19 of the '517 Patent under pre-AIA 35 U.S.C. § 103.

1. Identification of prior art

Petitioner relies upon the references listed in the Table of Exhibits, including:

- U.S. Patent No. 6,624,843 ("Lennon" (Ex.1004)), which was filed on December 8, 2000, and issued on September 23, 2003. Lennon is prior art under pre-AIA 35 U.S.C. § 102(b).

- U.S. Patent No. 8,438,081 ("Gray" (Ex.1005)), which was filed on October 7, 2009, and issued on May 7, 2013. Gray claims priority to Prov. Appl. No. 61/195,821 ("'821 Appl." (Ex.1008)), filed on October 9, 2008, and to Prov. Appl. No. 61/119,649 ("'649 Appl." (Ex.1009)), filed on December 3, 2008. Gray is prior art under pre-AIA 35 U.S.C. § 102(e). For the purposes of this petition, Gray is entitled to the filing dates of its provisional applications. *See, e.g.*, Ex.1008, 4-5, 10, 13-15, 17-19; Ex.1009, 2-3.
- YouCam 3 User's Guide ("User's Guide" (Ex.1006)) was published and made available to the public by CyberLink Corp.[2] on its public website no later than June 19, 2009. *See* Ex.1040; Ex.1036; Ex.1037; Ex.1038; Ex.1039; Ex.1041; Ex.1042; Ex.1043; Ex.1044; Ex.1045. The User's Guide is prior art under pre-AIA 35 U.S.C. § 102(a).
- YouCam 3 Publication Video ("Publication Video" (Ex.1007)) was published by CyberLink Corp. on YouTube.com no later than June 18, 2009. *See CyberLink YouCam 3 - The Fun Effects Software for HD Webcams*, YOUTUBE,

[2] Petitioner Perfect Corp. is an independent company spin-off from CyberLink Corp.

https://www.youtube.com/watch?v=u6KVOe2WQgw (last visited May 2, 2025). *See also* Ex.1036; Ex.1047; Ex.1048. Ex.1006 is prior art under pre-AIA 35 U.S.C. § 102(a).

2. Grounds for challenge and challenged claims

The table below summarizes the grounds and challenges.

Ground	Reference(s)	Challenged Claims *(*indicates independent claim)*
1	Lennon and Gray	1*, 2-3, 6-7, 9-10, 12, 13*, 14-15, 18-19
2	YouCam 3 User's Guide and YouCam 3 Publication Video	1*, 2-3, 6-7, 9-10, 12, 13*, 14-15, 18-19

This Petition, supported by the declarations of Professor Eli Saber ("Saber" (Ex.1002)), Manal Ma ("Ma" (Ex.1036)), David Haugen ("Haugen" (Ex.1040)), Yu Ching Wu ("Wu" (Ex.1047)), and the evidence cited therein demonstrate a reasonable likelihood that Petitioner will prevail with respect to cancellation of at least one challenged claim. *See* 35 U.S.C. § 314(a).

3. Statutory ground(s) of challenge and legal principles

This Petition requests cancellation of claims 1-3, 6-7, 9-10, 12-15, and 18-19 of the '517 Patent under pre-AIA 35 U.S.C. § 103.

IV. THE '517 PATENT

A. Overview of the '517 Patent

The '517 Patent discloses a system that allows a user to simulate wearing wearable items by providing a composite image of a live video feed of the user

wearing at least one virtual wearable item. The '517 Patent's virtual-try-on system ("VTO") thus allows a user in an online setting to "try on" the wearable item before purchasing it and physically trying it on for the first time after it is shipped to the user. Ex.1001, 1:20-41. The '517 Patent implements the invention through a series of conventional and generically described "modules" that lack any technical detail. Figure 1 of the '517 Patent illustrates the invention, and the use of these generic modules:

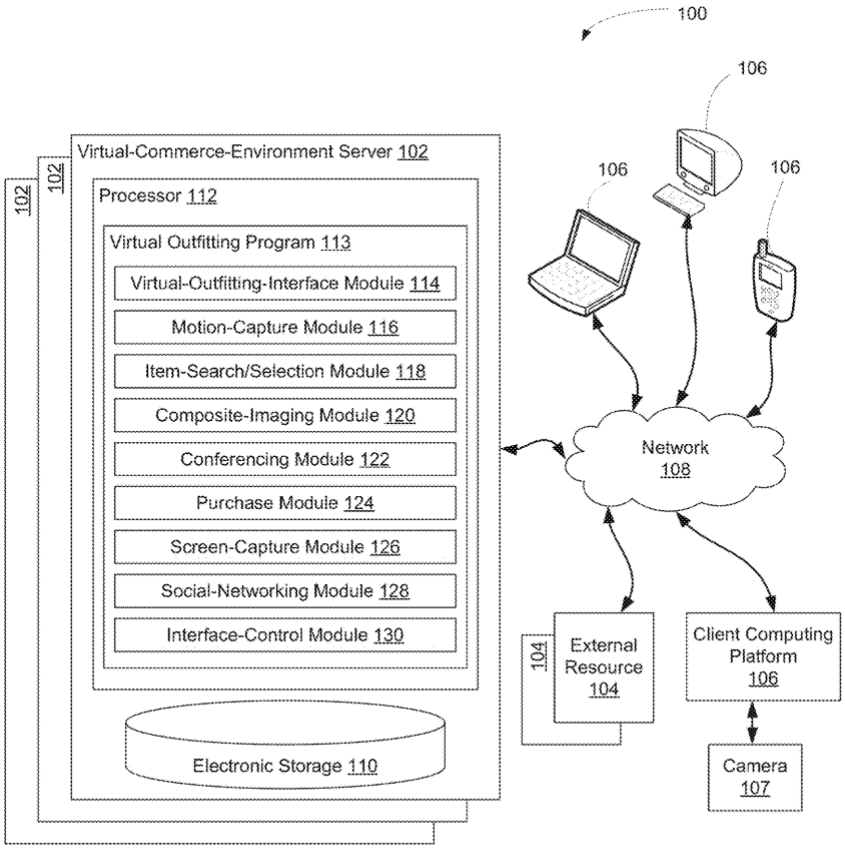


FIG. 1

One of the many disclosed modules is the "Social-Networking Module" 128, which generically, at a high level, describes the ability of the user to share the composite image results and otherwise interact with others (e.g., friends and family), including on social networking platforms, as part of the VTO experience. *Id.* at 6:45-56, 14:46-64. *See* Ex.1002 ¶¶ 49-52.

B. Prosecution of the '517 Patent

The '517 Patent was filed as Appl. No. 14/936,444 on November 9, 2015. Ex.1010 at 188. In a Non-Final Office Action mailed on November 28, 2017, the Examiner rejected all pending claims (claims 21-40) under 35 U.S.C. § 101. *Id.* at 150-51. The Examiner concluded that the claims were directed to the abstract idea of gathering and analyzing information to simulate wearing items, and that this concept was implemented using only conventional computer functions, which was insufficient to confer patent eligibility. *Id.*

In a response dated May 29, 2018, the Applicant contested the § 101 rejection. *Id.* at 138-40. However, in a Final Office Action dated July 7, 2018, the Examiner maintained that "the concept of allowing a user to simulate wearing real-wearable items based on gathering and analyzing information" remained abstract, and that the inclusion of a "processor" did not make the claims patent-eligible under § 101. *Id.* at 115.

In response to the Final Office Action, the Applicant submitted amendments to all but one claim of the pending claims and added four new claims. *Id.* at 89-94. Following this, the Examiner issued a Notice of Allowability, withdrew the § 101 rejection, and allowed the claims. *Id.* at 49-54.

Notably, the Examiner never issued any prior art-based rejections under §§ 102 or 103 during prosecution. In the Notice of Allowability, the Examiner simply cited four references as relevant background art, without relying on them for any rejection. *Id.*

V. CLAIM CONSTRUCTION

In an IPR, the challenged claims are construed "in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." 37 C.F.R. § 42.100(b). At this time, Petitioner does not believe construction of any term is necessary to resolve the invalidity challenges set forth in this Petition. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999). Ex.1002 ¶¶ 56-57.

VI. LEVEL OF ORDINARY SKILL IN THE ART

A person having ordinary skill in the art ("POSA") as of the relevant date would have held a bachelor's degree in electrical engineering, computer science, computer engineering, or a related field, and had at least one year of experience

developing software. Ex.1002 ¶ 27. A POSA would be well familiar with computer vision, digital image/video processing, and computer networking technologies. *Id.* This definition is approximate; more experience may compensate for less formal education, and vice versa. *Id.*

VII. OBVIOUSNESS OF THE CHALLENGED CLAIMS

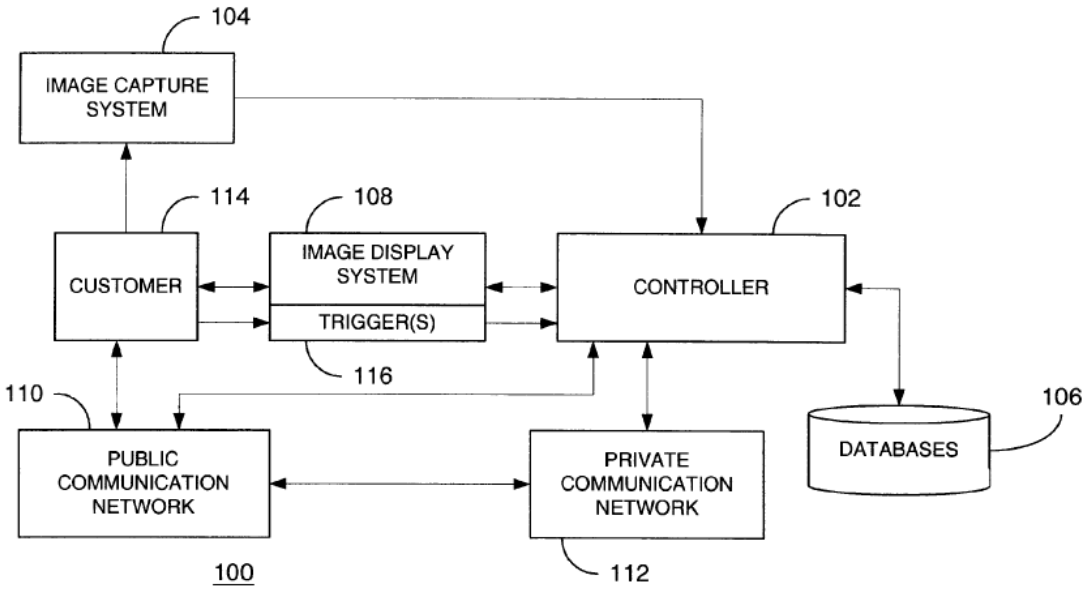
A. Ground 1: Lennon and Gray Render Obvious Claims 1-3, 6-7, 9-10, 12-15, and 18-19

1. Lennon

Lennon discloses an image capture system that uses well-known technology to enhance the user's virtual try-on experience. *See generally* Ex.1004. For example, users can electronically view themselves wearing virtual clothing in dimly lit dance halls or moderately lit boardrooms (*id.* at 2:20-28), with different music (*id.*), and realistic visualization (*id.* at 8:57-60). Lennon also enables users to share composite images through communication tools such as email or vendor websites. *Id.* at 9:24-36. Lennon not only teaches the creation of composite images but also their real-time generation and display of composite images based on biometric triggers including facial feature recognition and other biometrics-triggered composite image rendering. *Id.* at 3:46-59, 7:40-8:11.

Specifically, Lennon combines user images with reference model images by merging "video or still images of live, ordinary customers with video or still images of stored reference model images wearing the apparel." Ex.1004, 2:29-31. The

system simulates the appearance of garments on the potential customer's body by generating a "composite image" on a video display, showing the potential customer "in the featured apparel," thus allowing the customer to visualize how different clothing items would appear when worn. *Id.* at 2:35-37. Below is an example diagram that shows various components that can be used to implement Lennon's system 100.



Id. at Fig. 1.

Lennon utilizes the system 100 above to allow retailers or other providers of apparel the capability to "let customers visually assess the items without having to actually try the item on." Ex.1004, 4:6-10. This functionality follows a three-step process to achieve this virtual try-on functionality, which is illustrated in Lennon's Fig. 2.

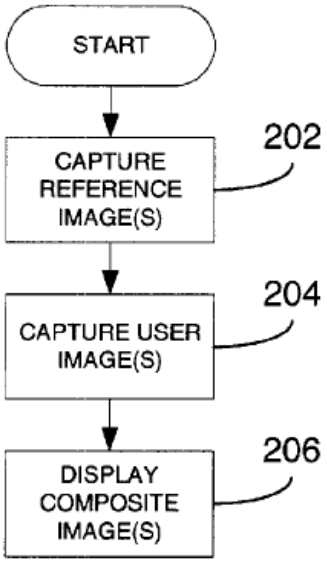
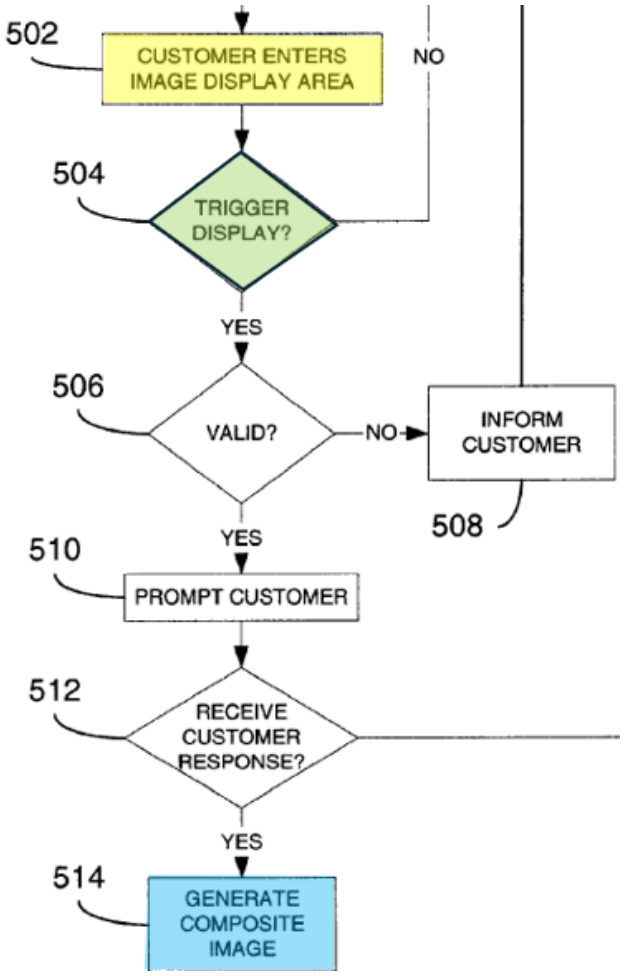


FIG. 2

Id. at 4:10-11, Fig. 2.

First, reference images of apparel items are captured, edited and modified such as to "edit out the extremities of the models (e.g., head, hair, hands, legs, etc.)" and then stored. *Id.* at 4:12-19, 5:26-29. Second, images of customers are captured. *Id.* at 4:19-24. "In contrast to the reference images, the customer images, when edited, may include only the customers' face, hair, hands, etc." *Id.* Optionally, motion detection or pattern recognition can be used to automatically capture the customer images. *Id.* at 6:21-25. Finally, "at step 206, a composite image comprising any one of the reference images and any one of the customer images is generated and displayed." *Id.* at 4:24-26. Body part (e.g., facial feature) recognition can also be used to identify the customer in an image display area so as to trigger the

generation and display of a composite image for that customer. *Id.* at 7:45-8:11, Fig. 5 (steps 504, 506, and 514). In other words, when a user enters an image display area, Lennon allows for a dynamic, trigger-based generation of composite images. *Id.*



Id. at Fig. 5 (excerpted and annotated).

The resulting composite image includes "elements unique to the customer (i.e., face, hair, hands, legs, etc.) taken from the customer's captured image" combined

with "the image of the apparel" in the ambience background. *Id.* at 8:54-60. Ex.1002 ¶¶ 65-70.

2. Gray

Gray discloses the use of well-known virtual wardrobe management features "for enhancing the user experience" in online shopping (Ex.1005, 1:16-18), such as manipulating virtual clothing (*id.* at 20:1-5) and utilizing digital communication tools like email and social sharing interfaces (*id.* at 12:3-7). Particularly, Gray's e-commerce platform allows users to create virtual representations of personal wardrobes, called "virtual closets," and assemble outfits using these items. *See generally* Ex.1005. Gray improves traditional e-commerce platforms by offering "features to extend the length of time a user stays in the site" and interface tools that are "clever in their ease of use or in their interaction" to enhance the virtual try-on experience. *Id.* at 1:31-45. Below illustrated is an example of Gray's interface.

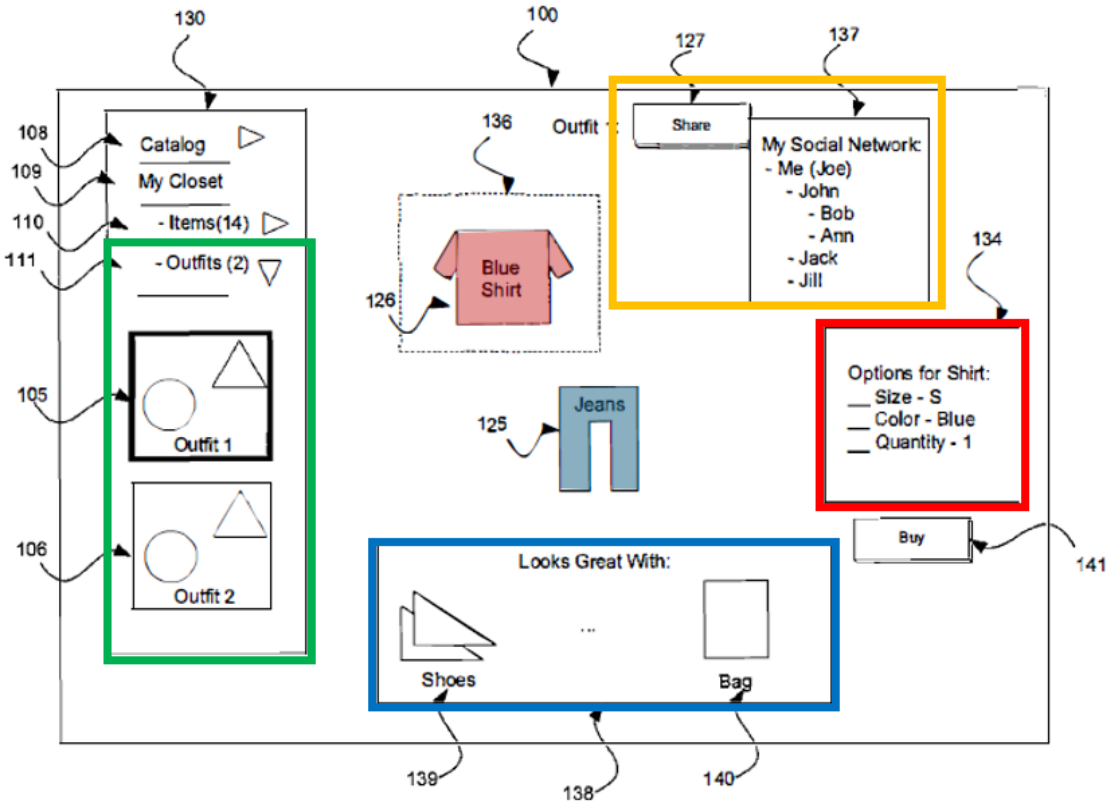


FIG. 1A

Id. at Fig. 1A (annotated).

Gray teaches that its users can add items such as apparel to their closets, and that can be done in several ways. *Id.* at 2:9-50. For example, a user can add to the outfit from "a selectable catalog of items" and the item will show in the virtual closet. *Id.* Such item can also be added from "a navigation of an electronic media source" over the network. *Id.* These items can be customized by attributes such as color, size, fabric, pattern, etc. *Id.* at 10:60-11:16; *see also* Fig. 1A (highlighted in the red box above). After the items are added, the user's items can be combined into "outfits," which are saved and can be named by the user for future reference and

actions (e.g., purchases or sharing). Ex.1005, 6:14-48; *see also* Fig. 1A (highlighted in the green box above). This allows users to plan and track their virtual closets, as well as "try out visual combinations and arrangements of the item to coordinate and evaluate." *Id.* at 6:29-47. Moreover, the platform can recommend new clothing items that would complement existing outfits in a wardrobe, enhancing personalization and upselling opportunities for retailers. *Id.* at 11:29-45; *see also* Fig. 1A (highlighted in the blue box above).

Gray's system also incorporates social functionality. Ex.1005, 5:4-51. Users may share their closets or outfits with others, allowing for collaborative fashion planning or feedback from friends. *Id.* at 11:57-12:13; *see also* Fig. 1A (highlighted in the orange box above). Gray's interface includes, e.g., "a share button 127" that allows a user to "provid[e] an item, outfit, or the closet of the user to another user." *Id.* In some cases, the user may choose to share a specific item or outfit they are considering purchasing or simply share the outfit that they have in their virtual closets. *Id.* The recipient can be someone within the user's social network, which is made up of members connected by "one or more degrees of separation (e.g., friends, or friends of friends, etc.)" *Id.*

Gray further provides, e.g., "a social network selection drop-down 137" that helps the user choose who to share with. Ex.1005, 11:57-12:13. Sharing can take many forms: a message sent through the retail website to a friend who's on the

website, an email, an SMS text message, a post on a website, or other similar means. *Id.* When the share button is activated, it can save data or perform another action to make the shared content available either instantly or at a scheduled time. *Id.* Ex.1002 ¶¶ 71-74.

3. Motivation to Combine Lennon and Gray

Retailers—including traditional brick-and-mortar stores—have long been incentivized to facilitate try-on (e.g., through fitting rooms and mirrors) and peer feedback (e.g., via sales staff), as these practices promote sales. This incentive has only increased with the rise of virtual commerce. A POSA would have been motivated to combine the teachings of Lennon and Gray to address this commercial incentive, and the specific problems that the '517 Patent seeks to solve. Ex.1002 ¶ 75. In particular, the '517 Patent aims to enhance user engagement, personalization, and social interaction in virtual try-on systems. *See, e.g.*, Ex.1001, 1:30-41 (Background of the Invention: describing a "barrier to affirming a desire to purchase" in the e-commerce environment).

At the time of the invention, a POSA would have been motivated to leverage existing technology to support virtual try-on behavior. Lennon teaches capturing a customer's image or video and overlaying digital representations of garments, enabling a personalized and realistic try-on experience. *See generally* Ex.1004. Lennon also discloses dynamic, trigger-based image composition—e.g., generating

a composite image when a customer enters a display area), thereby enabling real-time, interactive visualization. *See, e.g.*, *id.* at 7:45-8:11, Fig. 5. These teachings align with the '517 Patent's emphasis on real-time feedback and video-based simulation. A POSA would have understood that Lennon disclosed a responsive system that personalizes try-on experiences based on user input or presence. Ex.1002 ¶¶ 76-80.

In a complementary fashion, Gray provides a robust framework for personalized wardrobe management, including item selection from digital catalogs, combining selected items into "outfits," saving those combinations, and sharing them with others. *See generally* Ex.1005. Gray further introduces features such as setting item attributes (e.g., size, color, quantity), providing outfit visual previews, and integrating social networking components for peer feedback—all intended to enhance user engagement in virtual shopping. Ex.1005 at 10:1-12:13. These capabilities correspond directly to the '517 Patent's interface features for personalized outfit selection, customization, and sharing. Ex.1002 ¶ 81.

A POSA would have recognized that combining the complimentary features of Gray and Lennon would meet the increasing demand for interactive, engaging, and self-directed virtual try-on experiences. This motivation would have stemmed from well-documented consumer behavior in both physical and virtual retail environments. *See, e.g.*, Ex.1001, 1:30-42 (noting the need for virtual try-on in e-

commerce); Ex.1004, 1:25-29 (identifying the importance of visualizing clothing on one's body type to form an idea of how it will look); Ex.1005, 1:30-40 (discussing, as the background, observing that traditional e-commerce website's lack aspects of the in-store shopping experience); Ex.1002 ¶ 82.

Retailers increasingly sought to replicate the in-store experience on the Internet, which includes social feedback and customized recommendations. Lennon discloses sharing composite images or videos of users wearing virtual garments via electronic means such as email, World Wide Web or Internet websites, or other electronic communication platforms. Ex.1004, 9:27-30. Gray expands on this sharing concept by providing mechanisms for broader sharing and interaction, including integration with social platforms and peer input features. Ex.1005, 11:57-12:13. Hence, while Lennon addresses the need to see garments on the user's own image, Gray enhances user engagement and social interaction: Together, they form two complementary aspects of the same virtual retail solution. A POSA would have appreciated that combining these known elements satisfies longstanding consumer needs and improves the overall virtual try-on experience. Ex.1002 ¶ 83; s*ee KSR Int'l v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) ("A person of ordinary skill is also a person of ordinary creativity, not an automaton.").

Further, the combination presents no technical challenges. Both Lennon and Gray rely on conventional software-based graphical processing and retail-oriented

graphic user interface (GUI) design. Integrating Gray's interactive GUI functionalities (e.g., virtual closet, social sharing, etc.) into Lennon's virtual try-on platform would merely involve adapting existing GUI components, which a POSA could accomplish without inventive skill. The implementation would not necessitate any new hardware or complex algorithmic development. Ex.1002 ¶¶ 84-86.

A POSA would have been motivated to integrate Lennon's virtual try-on technology with Gray's user interface and social sharing features to produce a more fluid, comprehensive, engaging, and user-tailored virtual try-on experience. Ex.1002 ¶ 87. The resulting system—combining personalized virtual try-on capabilities with social feedback mechanisms—would represent a predictable improvement using known elements, rendering it obvious under *KSR*. *Id.*; *see* 550 U.S. at 417 ("[i]f a technique has been used to improve one device, and a [POSA] would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.").

4. Independent Claim 1 and Associated Dependent Claims

a. Claim 1

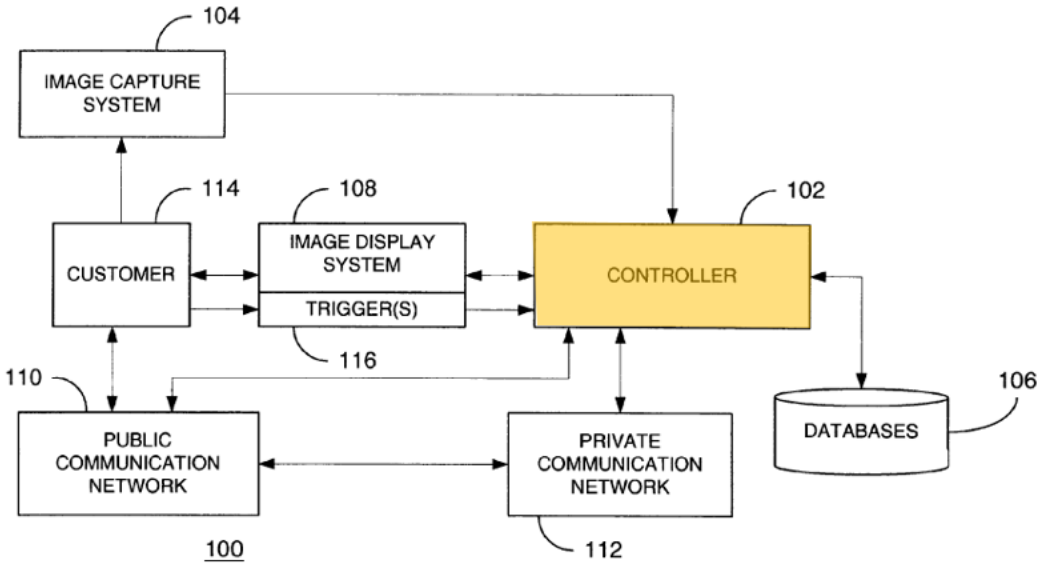
(i) 1[pre]: "A system configured for allowing a user to simulate wearing real-wearable items, the system comprising:"

Lennon discloses a system 100 that "allows apparel retailers and other purveyors of such items an opportunity to virtually 'dress' the potential customer in featured merchandise as a virtual 'fitting.'" Ex.1004, 2:12-15. The system produces

"an image of the customer in a new apparel style" through "manipulation of digitized images." *Id.* at 2:18-20. Thus, Lennon's system is configured to enable users to simulate wearing real-wearable items as required by the '517 Patent. Ex.1002 ¶ 88.

(ii) 1[a]: "one or more hardware processors configured by machine-readable instructions to:"

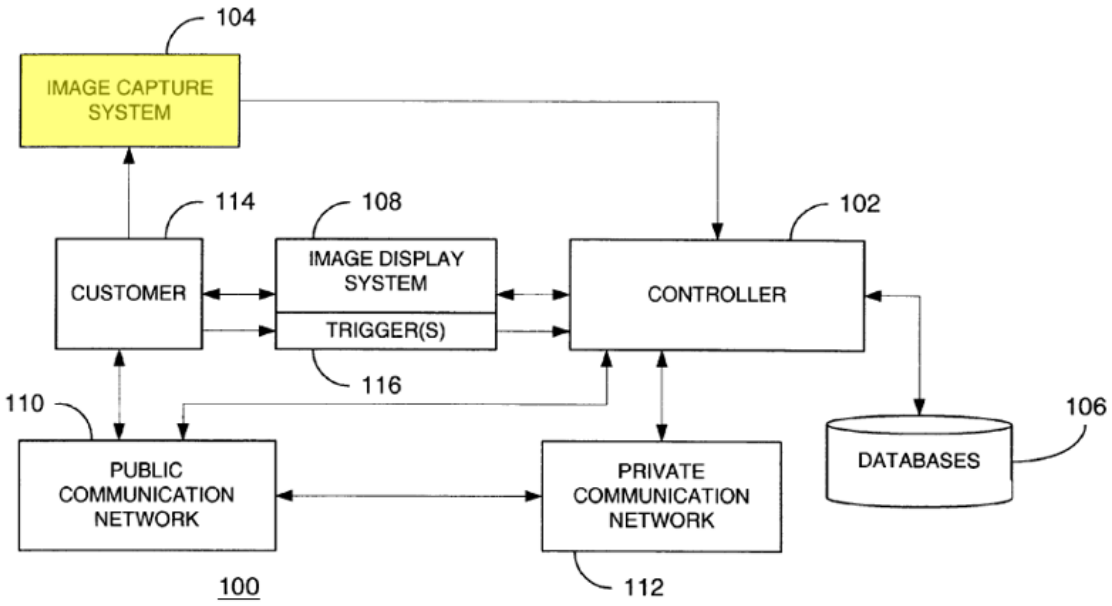
Lennon teaches that its system 100 includes "a controller 102" that may "comprise one or more computers or servers capable of executing software instructions stored in memory (e.g., volatile or non-volatile digital storage devices) via a suitable processor (e.g., microprocessor, microcontroller, digital signal processor or the like or combinations thereof)." Ex.1004, 3:13-18. Lennon further confirms that the steps and methods can "be implemented as stored software instructions executed by a suitable processor." *Id.* at 4:34-39.



Id. at Fig. 1 (annotated). Ex.1002 ¶ 89.

(iii) 1[b]: "obtain, from a client computing platform, a live video feed;"

Lennon includes an image capture system 104 that includes "one or more image capture devices, such as at least one full motion video camera or at least one still image camera, or a combination thereof." Ex.1004, 3:18-22.



Id. at Fig. 1 (annotated).

Lennon discloses obtaining a live video feed from a client computing platform. In step 204, Lennon discloses that "customer images are captured," and explains that the system can merge video or still images of the live user with stored reference model images. *Id.* at 4:19-20, 2:29-31. Furthermore, Lennon specifies that "both the reference images and the customer images may comprise full motion video or still images." *Id.* at 4:20-22. Accordingly, Lennon teaches obtaining a live video feed from a client computing platform.

This is consistent with what a POSA would have understood from the '517 Patent, which describes using "[a]n imaging device … configured to capture still images and/or a live video feed of a user of a given client computing platform." Ex.1001, 2:33-36. The '517 Patent generically lists potential imaging devices—such as analog, digital, 2D, stereo, or 3D cameras—without limiting the implementation. *Id.*; *see* Ex.1002 ¶¶ 90-92.

(iv) 1[c]: "recognize a position and/or orientation of one or more body parts of a user within the live video feed, the one or more body parts including a first body part;"

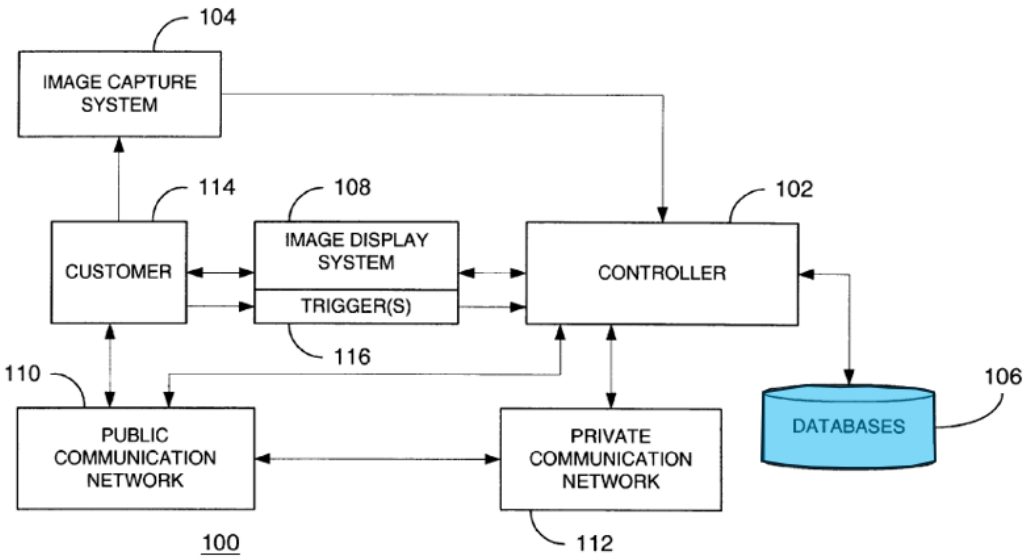
Lennon teaches recognition of a position and/or orientation of a body part of a user within the live video feed that Lennon's system receives. For example, during the reference image generation process (e.g., steps in Fig. 3), Lennon explains that "[w]hen a sufficient number of body sizes and types are recorded" for a given apparel item, "the images are edited … to remove the parts of the image other than the apparel style, i.e., the models' face, hair, hands, legs, etc." Ex.1004, 5:35-38. This step reflects body-part based segmentation, consistent with identifying orientation or position for virtual garment fitting.

Lennon further explains that identifying and segmenting user body parts in images or video was already well-known at the time. "Such editing [of face, hair, hands, legs out of images] can be accomplished using existing software such as Avid SoftImage or Adobe After Effects." *Id.* at 5:35:40. This confirms that Lennon relied

on conventional motion and visual editing software to isolate or recognize user body features for virtual apparel overlay.

This disclosure is consistent with the'517 Patent, which describes that "[a] motion-capture module 116 may be configured to recognize position and/or orientation of one more body parts of the user" to determine a position, size, and/or orientation for a given virtual-wearable item. Ex.1001, 13:4-12; Ex.1002 ¶¶ 93-94. Thus, both Lennon and the '517 Patent rely on functional, software-based recognition of body features to support virtual try-on alignment.

After the editing process, Lennon states that "[s]torage programs and visual pattern recognition programs are used to create the database of edited apparel styles." Ex.1004, 5:52-59. These edited reference images can be stored in the database 106 shown in FIG. 1 below. *Id.*



Id. at Fig. 1(annotated). Lennon further discloses that the edited apparel styles may be stored separately or combined with "other meta information, i.e., information that describes each reference image in some manner, such as identification of each apparel style, body type, etc." *Id.* This meta-tagging facilitates the retrieval and fitting process in virtual try-on systems.

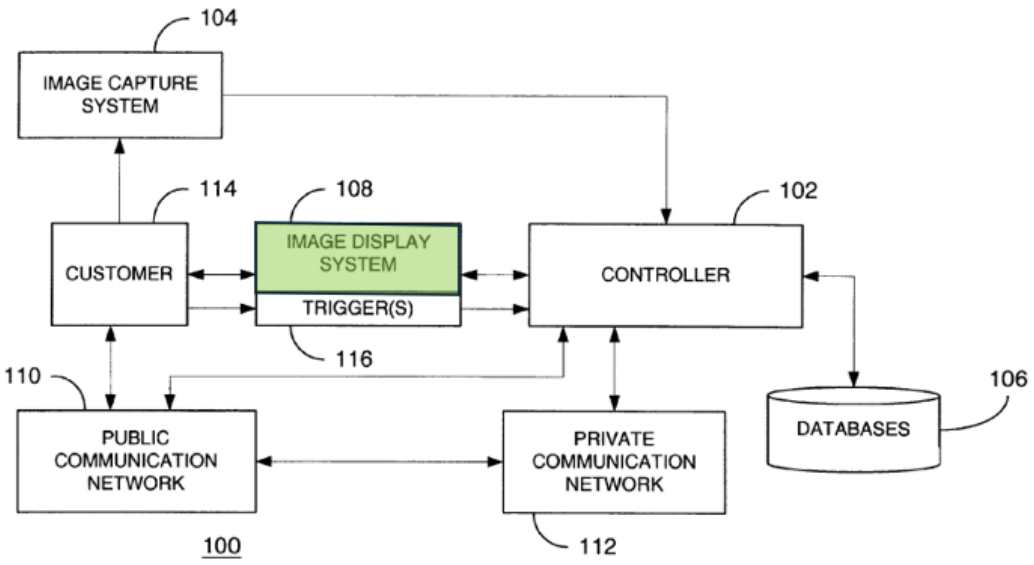
Once the reference image database is established, Lennon teaches how to use "a controlled environment as closely identical as practicable to that used to capture the reference images" for obtaining customer images. *Id.* at 6:8-15. Techniques similar to those used for capturing and establishing the reference image database are used for customer image capturing. "Because of the similarity of the controlled environments used, the same camera angles and heights are used when acquiring the customer's body image," thereby resulting in the similarity of the resulting customer images to the stored reference images, *id.* at 6:35-40, which in turn allows "a more accurate determination of the customer's biometrics, i.e., body size and shape." *Id.* In contrast to the reference images, "the customer images, when edited, may include only the customers' face, hair, hands, etc." *Id.* at 4:22-25.

Based on the above disclosures—and Lennon's express statement that "both the reference images and the customer images may comprise full motion video or still images," (*id.*)—a POSA would have understood that Lennon disclosed

recognition of a position and/or orientation of a body part of a user within the live video feed. This understanding is supported by Ex.1002 ¶¶ 95-97.

(v) 1[d]: "provide a virtual-outfitting interface for presentation to the user via the client computing platform, the virtual-outfitting interface including two or more separate portions simultaneously presented in the virtual-outfitting interface, the two or more separate portions including a main display portion and an icon that is overlaid upon the main display portion,"

Lennon teaches that its system "retrieves the stored reference images from a database and applies the stored reference image to the digitized image of the customer's body." Ex.1004, 2:31-37. "The potential customer is shown in the featured apparel (the stored reference image) by displaying the composite image on a video display." *Id.*



Id. at Fig. 1 (annotated). Thus, Lennon provides a virtual-outfitting interface for presentation to the user via the client computing platform as claimed. Ex.1002 ¶ 98.

Furthermore, Lennon teaches that the customer "may be allowed to directly enter requests (for example, in response to the same questionnaire or without prompting) for other apparel styles or colors from the images stored in the database." Ex.1004, 9:8-11. Allowing the customer to select an apparel in a virtual try-on setting is a basic, well-known function. Ex.1002 ¶ 99. The Background section of Lennon also states that "[h]aving created a virtual model, the customer can select various clothing styles for display using the virtual model." Ex.1004, 1:37-39.

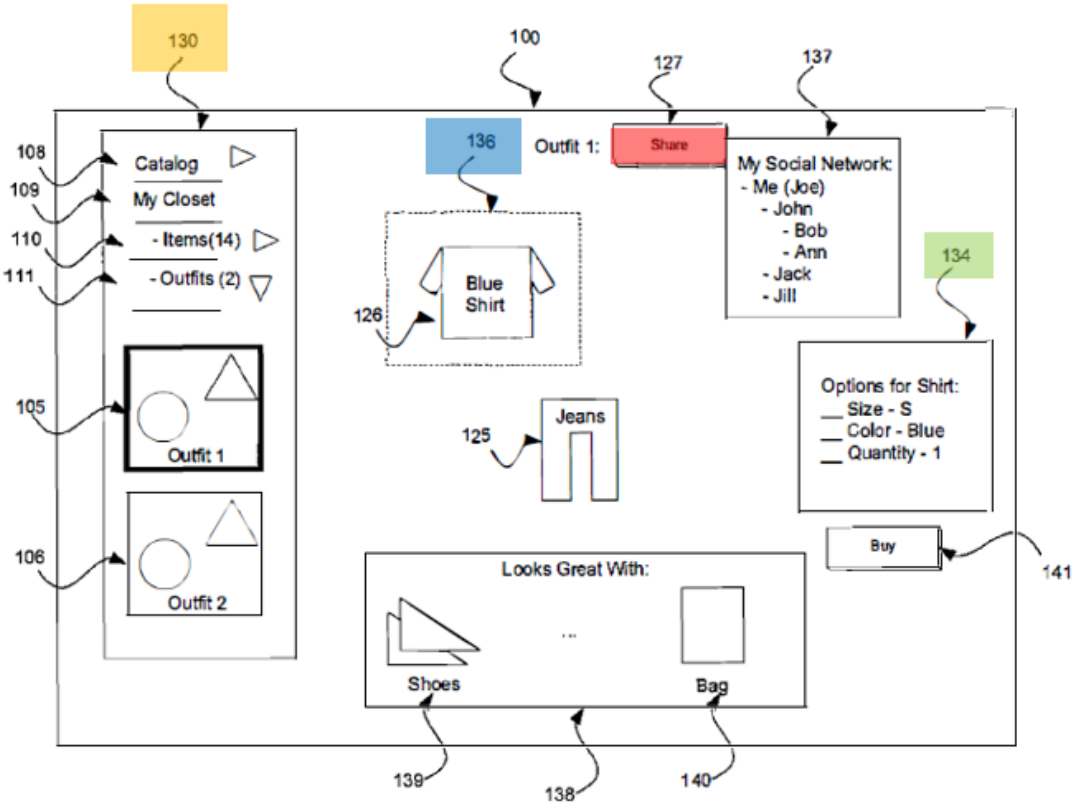
It follows that Lennon, by having (1) a main display portion for presenting composite images and (2) a secondary portion displaying additional information, such as alternative apparels items or selectable options (e.g., size, color). Ex.1002 ¶ 100. These portions are presented simultaneously to the user to view the try-on result while interacting with configuration or selection options. Accordingly, Lennon teaches a "virtual-outfitting interface including two or more separate portions simultaneously presented in the virtual-outfitting interface." *Id.* Thus, based on Lennon's disclosure, it would have been obvious to a POSA at the time of the invention to implement the same, as such a layout would predictably enhance user interaction by allowing real-time comparison and selection.

Furthermore, Lennon includes multiple display screens, stating that its "image display system 108 allows composite images … to be displayed to a customer in close proximity to ***one of the display screens***." Ex.1004, 3:46-50 (emphasis added). Lennon also introduces "trigger devices 116" that are placed in close proximity to its display screens, such as "keypads, card readers, ***touch screens***, cameras or the like" for triggering composite image generation as well as receiving customer inputs. *Id.* at 3:53-59 (emphasis added). Having two portions in a screen where one portion displays the composite image outcome while the other portion displays other information (e.g., selectable apparel options) is therefore not inventive. Ex.1002 ¶ 101.

Similarly, having "an icon that is overlaid upon the main display portion" such as claimed would have been obvious at least because a POSA would have known to implement a user interface to allow the customer to enter options such as selecting a different apparel for the composite image/video output, and an icon would have been a well-known, obvious choice for such user interface. Ex.1002 ¶ 102. This is explicitly consistent with the specification's description of icons. Ex.1001, 5:62-66; *see also id.* at 13:63-14:3.

In addition to Lennon's teaching, Gray also discloses this limitation. Ex.1002 ¶ 103. Gray teaches a user interface for a virtual closet, where the interface includes

two or more separate portions having a main display portion and an icon that is overlaid upon the main display portion. Below is an example interface from Gray.



Ex.1005, Fig. 1A (annotated).

As can be seen from the above, Gray at least discloses that a configure control 136 that "enables the user to resize, skew, flip, or otherwise model the visual representation of the item." *Id.* at 10:49-50. In addition, Gray shows an options panel 134 in its interface where it includes "at least one attribute about an item within the canvas and enables editing the attribute," e.g., color, size, fabric, pattern, etc. *Id.* at 10:60-65. Another user interface in Gray includes a management panel 130 that includes "a plurality of activation components 108-111 that can have various

functions, such as selecting and displaying the outfit within the canvas of interface or providing a rating to a certain outfit." *Id.* at 10:13-28. "Interface 100 also has a plurality of controls for managing the items, outfit, or virtual closet, including share button 127, social network selection drop down 137, and buy button 141." *Id.* at 10:9-12. All these are examples of Gray's interface that render the claimed feature obvious.

Accordingly, this limitation would have been obvious over Lennon and Gray. Ex.1002 ¶¶ 103-05.

(vi) 1[e][1]: "wherein the main display portion includes a composite video feed that incorporates the live video feed of the user and a first virtual-wearable item, and"

Lennon teaches this limitation by explaining that its system is "capable of merging video or still images of ***live, ordinary customers*** with video or still images of stored reference model images wearing the apparel." Ex.1004, 2:29-31 (emphasis added). This directly supports the concept of compositing visual input from a live user with stored garment information.

Lennon further describes its "image capture system 104" as including "one or more image capture devices, such as ***at least one full motion video camera*** or at least one still image camera[.]" *Id.* at 3:18-22 (emphasis added). This supports the system capability to generate and utilize live video feed for compositing.

Lennon's system "retrieves the stored reference images from a database" and "applies the stored reference image to the digitized image of the customer's body" to generate the composite video feed. *Id.* at 2:31-34. As Lennon explains, "[i]n effect, the composite image combines each customer's actual appearance (as dictated by his or her facial features, hair color, etc.) with an image of the desired apparel item as it would appear when worn by a person having a similar body shape to the customer." *Id.* at 4:24-31. This further demonstrates the system's capability to generate realistic, user-specific, virtual try-on composites using both stored and real-time inputs.

Lennon's system generates a composite video feed that incorporates both "the live video feed of the user" and "a first virtual-wearable item" as claimed. To generate the composite image or video, Lennon employs multiple cameras, positioned at defined locations, heights, and angles to capture. This structured camera arrangement facilitates consistent image acquisition for virtual try-on. For example, Lenon describes that "one or more fixed, vertical posts are erected at the end of or along the runway with a camera array or lens array mounted at [five specific example heights]" and that "[s]imilarly equipped posts at forty-five degree angles relative to the end post(s) are also preferably provided in order to capture a full 180° view." Ex.1004, 4:58-62, 4:64-66. These features ensure comprehensive video capture of the user from multiple perspectives.

After capturing live video of the user, Lenon teaches processing and editing that video to remove the user's existing clothing—leaving "only the customers' face, hair, hands, etc." Ex.1004, 4:22-24. This processed user video is then incorporated into a composite video. Specifically, Lennon explains that the "customer's captured image (as identified at step 506) combined with a reference image of the selected apparel item is generated at step 514." *Id.* at 8:48-60. This step produces the final composite visual output used in the virtual fitting process.

Furthermore, Lennon states that the "[t]echniques for merging elements from separate video or still image sources are ***well known*** in the art as embodied, for example, in Adobe's After Affects Producer bundle program." Ex.1004, 8:51-54 (emphasis added). This understanding is also consistent with the teachings in the '517 Patent. In the specification of the '517 Patent, Patent Owner provides almost no implementation detail, relying on POSA's knowledge to fill the gaps, for example:

> In some implementations, the main display portion may include a composite video feed that incorporates a video feed of the user and one or more virtual-wearable items selected by the user via the item-search/selection module. The video feed of the user may be obtained by an imaging device associated with one of the client computing platforms. Presentation of the composite video feed may be in real time or near-real time.

Ex.1001, 4:40-47; *see also* 1:59-63 (repeating the same description in Summary), 8:9-15 (repeating the same description almost verbatim); Ex.1002 ¶ 109. "[A] patent need not teach, and preferably omits, what is well known in the art." *Hybritech Inc. v. Monoclonal Antibodies, Inc.,* 802 F.2d 1367, 1384 (Fed. Cir. 1986).

Consequently, a POSA would have understood that Lennon disclosed this claim limitation. Ex.1002 ¶¶ 106-10.

(vii) 1[e][2]: "wherein a position, size, and/or orientation of the first virtual-wearable item is determined such that the first virtual-wearable item moves within the main display portion according to the position and/or orientation of the user within the live video feed so that the user appears to be wearing the first virtual-wearable item in real time in the main display portion; and"

Lennon discloses that "[t]he composite image comprises elements unique to the customer (i.e., face, hair, hands, legs, etc.) taken from the customer's captured image combined with the image of the apparel in the ambience background." Ex.1004, 8:54-60. "Thus, the composite image, when displayed, provides a more realistic depiction of what the customer would look like in the selected apparel in the appropriate background." *Id.* This underscores Lennon's focus on realism through compositing. Lennon emphasizes generating composite visuals by merging the customer's captured image with apparel reference images, resulting in a unified visual output. This approach ensures that the virtual-wearable item is realistically

rendered within the live video feed, visually simulating the user wearing the item in context.

Lennon achieves this functionality through a combination of (1) controlled environments and (2) established image processing techniques. Ex.1002 ¶¶ 111-12. As to the first, Lennon explains that "[b]ecause of the similarity of the controlled environments used, the same camera angles and heights are used when acquiring the customer's body image." Ex.1004, 6:35-40. This environmental consistency improves spatial alignment between the captured and referenced image. Lennon further states that "[t]he similarity of the resulting customer images to the stored reference images allows a more accurate determination of the customer's biometrics, i.e., body size and shape." *Id.* This facilitates precise apparel overlay based on matching body proportions. The use of a controlled capture environment minimizes the need for complex image corrections or adjustments during the compositing process, thereby reducing the processing and editing workload. Ex.1002 ¶ 113.

As to the second element, Lennon teaches editing techniques where "[r]eference images comprise various apparel items as worn by models and edited to remove at least some portions of the image other than the apparel item being worn, i.e., the models' face, hair, hands, legs, etc." and "the customer images, when edited, may include only the customers' face, hair, hands, etc." Ex.1004, 4:15-19, 4:22-24. Lennon further explains that "[s]uch editing can be accomplished using existing

software such as Avid SoftImage or Adobe After Effects" and that "both the reference images and the customer images may comprise full motion video or still images." *Id.* at 5:35-40, 4:19-22. These disclosures demonstrate that Lennon relies on conventional tools for generating edited, video-based composite content.

Lennon additionally teaches that its system "is capable of distinguishing differences between body sizes and is capable of filling in variations." *Id.* at 2:48-51. This enables the virtual apparel to adapt to users with different body types. Lennon describes using "[a] value system or weighting system" to "assign a value to distinguish the various body forms of customers." *Id.* This system "helps ensure a close match of the stored reference images to the captured image, creating a more realistic viewing of how the apparel style or color will look on the potential customer." Ex.1004, 2:43-48; Ex.1002 ¶ 114. Lennon's image processing, together with body-matching, supports precise rendering of virtual-wearable items on the user.

Consequently, a POSA, after reading Lennon's disclosure, would understand that Lennon's system relies on established image processing methods to edit both stored model reference images and the user's live video feed. The rendered apparel must necessarily follow the user's position and orientation in the live feed to achieve a visually realistic result. Ex.1002 ¶¶ 112-15. Through this integration, the virtual-wearable item dynamically synchronizes with the user's movements, yielding "a

more realistic depiction of what the customer would look like in the selected apparel." Ex.1004, 8:54-60. This real-time tracking effect would have been understood by a POSA as necessary for accurate virtual try-on.

In comparison, the '517 Patent's specification uses generic, functional language—e.g., "motion-capture module"—without providing structural or algorithmic details. Its disclosures are completely result oriented. For example, the '517 Patent describes that:

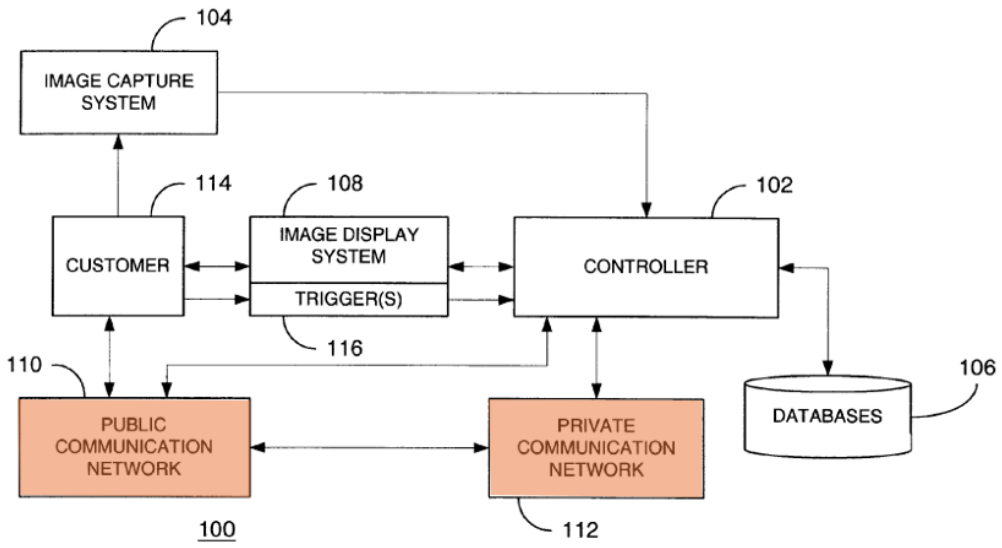
> [T]he motion-capture module may be configured to recognize position and/or orientation of one more body parts of the user in the main display portion in order to determine a position, size, and/or orientation for a given virtual-wearable item in the main display portion. Once the one or more body parts are recognized, the composite-imaging module may position a virtual-wearable item at a predetermined offset and/or orientation relative to the recognized one or more body parts.

Ex.1001, 5:3-11. The excerpt provides no meaningful implementation beyond the claim language. The specification offers no algorithm or structural description that teaches a POSA how to perform the claim functions. As a result, the '517 Patent relies on the existing knowledge of a POSA to implement these functions. *See Hybritech*, 802 F.2d at 1384; *see generally* Ex.1001; Ex.1002 ¶ 116. Therefore, even after reviewing the '517 Patent, a POSA would not view this limitation as claiming any functionality distinct subject matter beyond what Lennon already discloses.

Ex.1002 ¶¶ 111-16. A POSA would have understood that Lennon discloses this limitation.

(viii) 1[f]: "provide a social-networking tool graphically presented in the virtual-outfitting interface, the social-networking tool allowing the user to interface with one or more social-networking services with which the user is associated."

Lennon describes sharing of the resulting composite images via the Internet with third parties. In one example, Lennon states that "[i]f the customer has an established e-mail address, the composite image can be sent via the public or private communication networks 110, 112 to the e-mail address provided." Ex.1004, 9:27-30.



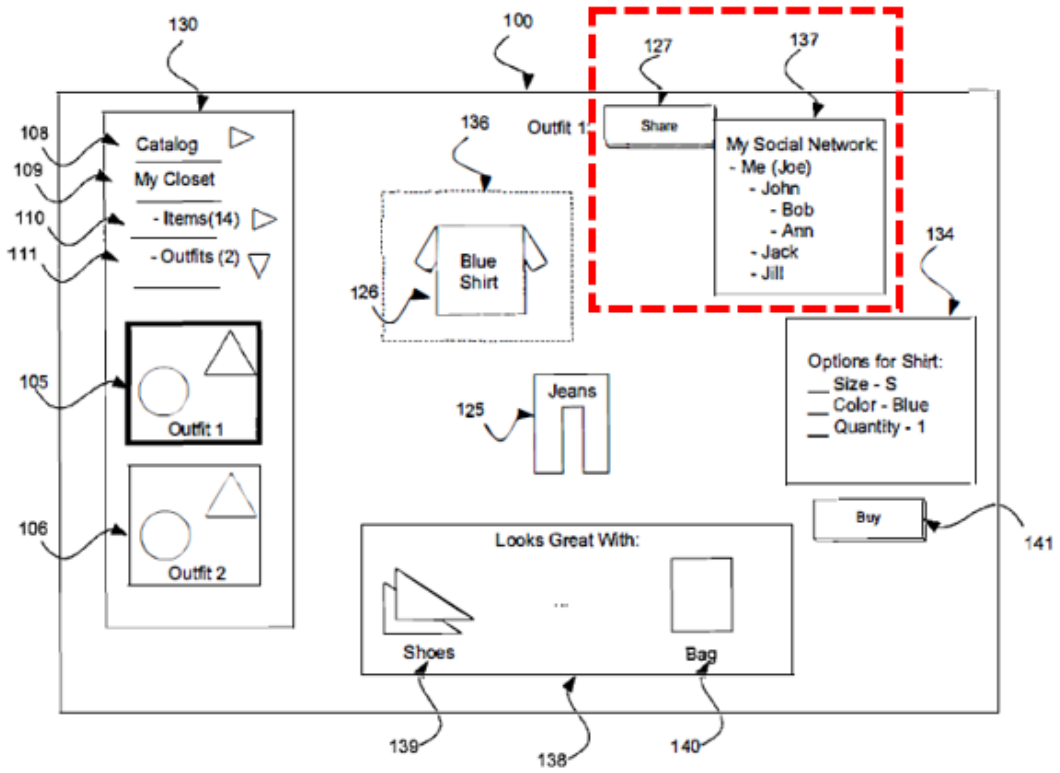
Id. at Fig. 1 (annotated).

Lennon further describes, "if the merchant has an interactive and secure World Wide Web or Internet web site, the customer can be permitted to access their

digitized body image and generate composite images with the merchants apparel images." *Id.* at 9:30-34. Lennon also discusses the possibility of using a cell phone or a hand-held computer to share the composite images. "[T]he customer's captured image can be stored in a personal communication device, such as a cell phone, personal digital assistant (PDA) or palmtop computer." *Id.* at 10:13-18. "In this manner, the customer can selectively provide his or her image with any of a variety of retailers[.]" *Id*. Overall, it would have been obvious to a POSA to implement a user interface in Lennon's system that enables sharing of composite videos with others—whether through direct communication or via social networks on the Internet.

In addition, Gray explicitly teaches a user interface 100 that "also has a plurality of controls for managing the items, outfit, or virtual closet, including ***share button 127***, ***social network selection drop down 137***, and buy button 141." Ex.1005, 10:9-11 (emphasis added). Gray explains that its share button 127 "enables providing an item, outfit, or closet of the user to another user." *Id.* at 11:57-66. Gray also provides examples of things that can be shared by a user to a friend, e.g., "a particular item or outfit to be purchased may be selected to be shared" and "the outfit being currently managed [can be] shared." *Id.* Further, Gray states that the people to whom the user can share the outfit with can include "the other user may be within the social network of the user" and that "a social network may comprise data

representing an interrelation between members such that the members may be connected by one or more degrees of separation (e.g., friends, friends of friends, etc.)." *Id.*



Id. at Fig. 1A (annotated). As such, Gray provides a social-networking tool graphically presented in the virtual-outfitting interface.

As discussed above, it would have been obvious to a POSA to integrate Lennon's composite-image virtual try-on system with Gray's social sharing and user interface features. It would have been both logical and desirable to extend Lennon's basic sharing capabilities to include the more robust, socially interactive features disclosed in Gray. The result—a more socially integrated virtual try-on

experience—would have been predictable and consistent with user behavior trends in e-commerce. *See supra* Sec. VII.A.3. Consequently, this limitation would have been obvious in view of Lennon combined with Gray. Ex.1002 ¶¶ 117-20.

b. Claim 2: "The system of claim 1, wherein interfacing with a given social-networking service includes sharing a snapshot with one or more contacts of the user within the given social-networking service."

Lennon expressly discloses sharing the composite image—combining a user's realistic face with reference apparel images—via the Internet such as an e-mail. Ex.1004, 9:26-34. Gray similarly discloses advanced sharing functionalities, including "sharing the outfit by sending a message to a mobile device, or posting to an external third-party webpage," "sharing at least a portion of the outfit to another user associated with the user," as well as "shar[ing] the outfit with one of his friends, friend's friend, etc." Ex.1005, 5:14-19, 5:25-39, 11:57-66.

A POSA would have been motivated to combine Lennon's basic email and website-based sharing with the social-sharing mechanisms taught in Gray, including the ability to share with contacts via social-networking platforms. Ex.1002 ¶¶ 121-22. This modification reflects a predictable application of known prior art elements, functioning as expected and yielding no unexpected results. *Id.* Leveraging known social-network-based techniques to share composite images or snapshots with contacts would have been a routine design decision aimed at enhancing user

engagement. *Id.* Accordingly, this limitation would have been obvious in view of the combined teachings of Lennon and Gray. *Id.*

c. Claim 3: "The system of claim 1, wherein interfacing with a given social-networking service includes providing a comment on a profile page of the user within the given social-networking service, wherein the comment on the profile page includes one or both of a link or information associated with a real-wearable item corresponding to the first virtual-wearable item."

Lennon expressly discloses sharing the composite image—merging the user's realistic facial features with reference apparel—via Internet-based methods, such as e-mail or a website. Ex.1004, 9:26-34. Complementing Lennon, Gray discloses "sharing the outfit by … ***posting to an external third-party webpage***," and "sending a message to inform one or more people of a particular outfit … and providing within the message ***a link that pulls the recipient*** to the website to be able ***to view the outfit***." Ex.1005, 5:14-19, 7:6-16 (emphasis added). Gray further explains that "the link pulls the recipient to an interactive outfit canvas in the website displaying the outfit and from which the recipient also has access to the personal closet [of the user.]" *Id.* Additionally, "the recipient is also provided options to ***submit feedback*** to the outfit which is stored on the website and available to a creator of the outfit." *Id.* (emphasis added).

In view of Lennon and Gray, a POSA would have found it obvious to implement functionality allowing users to post comments on profile page within a

social-networking platform, where the comments include either a link to a real-wearable item, or information associated item, or both. Ex.1002 ¶¶ 123-24. At the time of the alleged invention, it was routine in social networking environments for users to post links, product references, and commentary on their own or other friends' profile pages. *Id.* The proposed combination would have applied known techniques in a predictable manner to enable expected social engagement functionality—e.g., posting and commenting on virtual outfits that reference real-world fashion items. *Id.*

d. Claim 6: "The system of claim 1, wherein:

the first virtual-wearable item includes one or both of a virtual garment or a virtual accessory; or

the first virtual-wearable item visually represents a corresponding real-wearable item."

Lennon discloses this limitation. Lennon's system "allows apparel retailers and other purveyors of such items an opportunity to virtually 'dress' the potential customer in featured merchandise as a virtual 'fitting.'" Ex.1004, 2:12-15. "Reference images comprise various apparel items as worn by models[.]" *Id.* at 4:15-16. During the image/video editing process, Lennon also teaches "shoes or fashion accessories to enhance the overall effect to accommodate different styles of the apparel item." *Id.* at 5:40-44. Ex.1002 ¶ 125.

e. Claim 7: "The system of claim 1, wherein the two or more separate portions of the virtual-outfitting interface further include a conferencing portion

configured to display video of one or more other users, the conferencing portion being configured to facilitate video communications between the user and at least one of the one or more other users via the one or more social-networking services with which the user is associated."

In facilitating shopping with social feedback, Gray discloses user interface functions that support multimedia playback and interactions within the user's social network. As previously discussed, Gray's GUI includes multiple display portions presented simultaneously—such as a main display area and overlaid buttons and icons for editing, sharing, and purchasing. This configuration allows users to engage with virtual outfits without navigating away from the main screen. *See* Ex.1005 at 10:9-12; 10:13-28, 10:49-50, 10:60-65.

Gray's GUI also enables communication with, and receiving content from, third-party websites. For example, Gray discloses a user interface for "a third-party media such as a third-party website 174, which includes interface 104, blog content 172, link item 171." Ex.1005, 13:32-37. "The blog content 172 may be any content, including a social networking data (e.g., showing posts to friends, ***sharing of video***, etc.), text content, ***multimedia content*** (e.g., HTML, video (Flash), links), or the like." *Id.* (emphasis added). Gray explicitly teaches that the user interface for the third-party content can be "configured to receive information from a server other than the server providing the other content of third-party website, to enable, for example, ***cross-domain communications***." *Id.* at 13:45-63. Gray's third-party user

interface can also "use substantially the same source code and/or application programming interface (API) as the [Gray's virtual closet interface] to provide, among other things, management of the outfit." *Id.*

Because Gray's system is designed to interoperate with third-party application programs, integrating a video conferencing feature would fall within its technical capabilities. Ex.1002 ¶¶ 126-28. A POSA would have understood that such integration enables users to participate in live video communications directly within the virtual outfitting interface. *Id.* Gray's emphasis on social engagement aligns with the integration of video communication through social networking platforms, allowing users to discuss virtual outfits in real time. *Id.* At the time of the '517 Patent, video conferencing and social networking were well-established technologies. Integrating such features into Gray's virtual outfitting system would have been a routine and a predictable enhancement. *Id.*

Accordingly, it would have been obvious to a POSA to incorporate a conferencing module—configured to display video of other users and enable real-time communication via social-networking services—into the combination of Lennon and Gray. Ex.1002 ¶¶ 126-29.

f. Claim 9: "The system of claim 1, wherein a size and/or position attributed to the two or more separate

portions of the virtual-outfitting interface is dynamic."

Gray discloses that its virtual closet interface is dynamic and adjustable. For example, Gray teaches that the user can "move an item incrementally forward and back in layers in comparison to other items on the canvas." Ex.1005, 22:52-64. As further illustrated in Fig. 7A, "item 126 can be moved forward in the layers above item 125, or vice versa." *Id.*

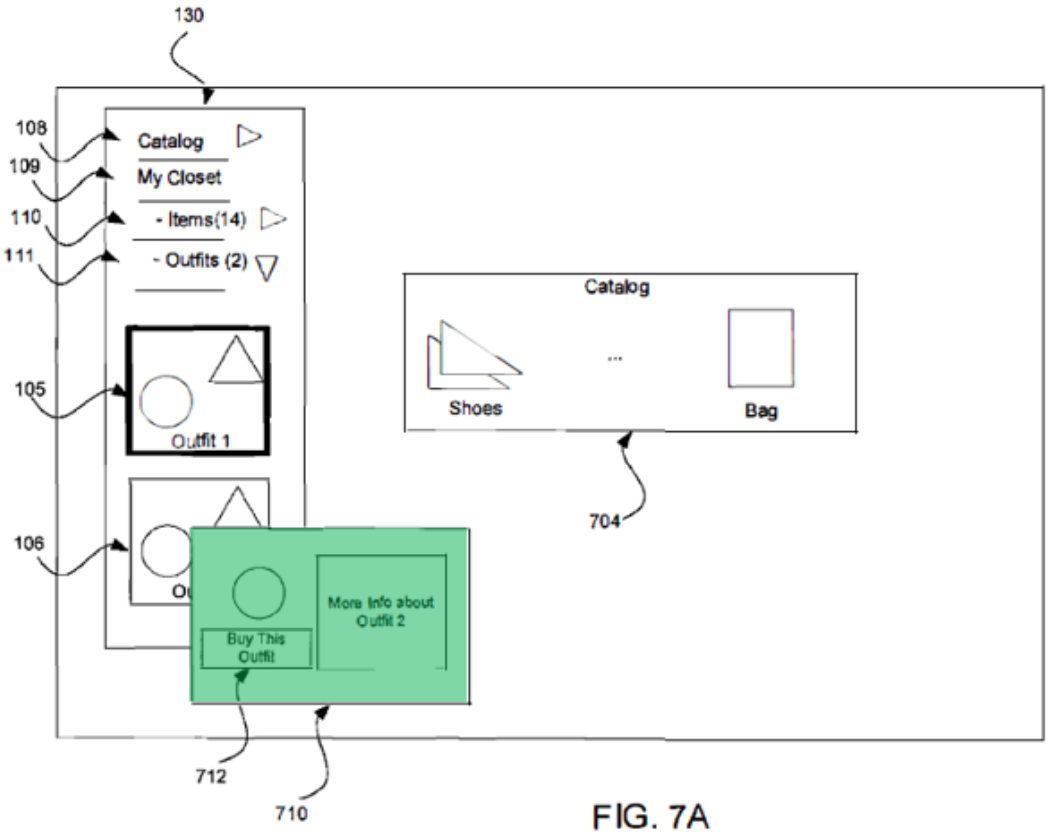


FIG. 7A

Id. at Fig. 7A (annotated).

Gray describes that, in the above-illustrated user interface, "[a]ny of number of items can be moved in any level of the layer of items" and "[t]he user can use a drop down menu, key menu, or other input to change the layering of the items." *Id.*

Additionally, Gray discloses a "configure control 136" that enables the user "to resize, skew, flip, or otherwise model the visual representation of the item." *Id.* at 10:49-59.

This limitation is also rendered obvious by Gray's disclosure of an "outfit canvas mode" which allows shoppers to "try out visual combinations and arrangements of items." Ex.1005, 19:50-20:7. Specifically, Gray teaches that, in the outfit canvas mode, "two or more items can be resized or moved on the canvas to allow the shopper to assemble various arrangements." *Id.* Gray further explains that when the website operates in the outfit canvas mode, interactions with the items (e.g., resizing and repositioning) may be "limited to the items currently in the canvas." However, in certain embodiments, the interface also supports adding items from the closet or catalog using "***a simultaneously displayed interface to those modes***" and users may also "be able to remove items to such resources." *Id.* (emphasis added). For example, a user can "invoke the canvas from within the closet such as from an individual item in the closet." *Id.* at 22:40-51. When "the closet 130 is displayed while the user surfs the site (e.g., the catalog 704)," an item or an outfit "can be activated to invoke the canvas 708, thus replacing (or even overlaying) the catalog 704 with the canvas 708." *Id.* This illustrates simultaneous interface portions and seamless transitions between catalog, closet, and canvas modes.

These features described above show that Gray's system includes an interface that has multiple, concurrently displayed, and interactive portions. Ex.1002 ¶¶ 130-33. Based on these capabilities, a POSA would have understood that simultaneously displaying different website modes (e.g., outfit canvas, closet, and catalog), alongside the ability to add, remove items across different website modes, and manipulate their size and positions, necessarily requires dynamic attribution of size and/or position attributed to interface components. *Id.*

This dynamic attribution concept is also consistent with Lennon, as discussed above in connection with element 1[d], teaches an interface comprising a main display portion for showing the composite image while having another portion displaying additional information such as other apparels and options available. *See supra* VII.A.4.a.(v). Accordingly, a POSA would have found it obvious to implement dynamic interface attribution in the combined system of Lennon and Gray to support seamless muti-mode functionality. Ex.1002 ¶¶ 130-34.

g. Claim 10: "The system of claim 1, wherein the one or more hardware processors are further configured by the machine-readable instructions to:

determine the position, size, and/or orientation of the first virtual-wearable item based on the position and/or orientation of the one or more body parts of the user recognized within the live video feed, wherein the first virtual-wearable item is positioned at a predetermined offset and/or orientation relative to the

one or more body parts of the user.

As discussed above with respect to element 1[e][2], a POSA would have recognized that Lennon discloses determining the position, size, and/or orientation of a virtual-wearable item based on the position and/or orientation of the one or more body parts of the user recognized within the live video feed. *See supra* Sec. VII.A.4.a.(vii); Ex.1002 ¶ 135.

Lennon discloses that reference images of apparel are edited to isolate only the garment (e.g., by removing the model's face, limbs, etc.), and that these edited garment images are superimposed onto customer images that retain only selected body features such as the face, hair, hands, and legs. Ex.1004, 4:15-24, 4:22-24. A POSA would understand that Lennon's editing process necessarily requires positioning of apparel with a predetermined offset and orientation relative to the visible body parts to generate a coherent and realistic composite image. Ex.1002 ¶ 136. Without this basic feature, simply overlaying garments without regard to consistent positioning the resulting composite image would resemble a broken collage or cut-and-paste. It would be lacking visual coherence and realism. *Id.* Moreover, Lennon emphasizes realism by having standardized capture conditions (e.g., fixed camera angle and height) and image processing tools such as Avid SoftImage or Adobe After Effects. *Id.* at 5:35-40, 6:35-40. These conditions ensure that the virtual-wearable item is placed at a consistent and deliberate location relative to the user's visible

body parts, enabling a seamless and realistic try-on experience. *Id.* Accordingly, Lennon teaches—or at a minimum renders obvious—that the virtual-wearable item is positioned at a predetermined offset and/or orientation relative to one or more body parts of the user. Ex.1002 ¶¶ 135-36.

h. Claim 12: "The system of claim 1, wherein one or more characteristics of the first virtual-wearable item are utilized to render the first virtual-wearable item in the main display portion to enhance a realness of the first virtual-wearable item as it appears within the main display portion."

Lennon teaches that characteristics of the virtual-wearable item, e.g., body size, fit, and style, are incorporated to enhance realism of the composite display. For example, Lennon explains that the merchant "selects the desired range of body sizes for each selected apparel style." Ex.1004, 5:7-3. Lennon further discloses that "video or still images of models, having a variety of body sizes typical to the majority of potential customer' body forms and wearing corresponding sizes of the selected apparel item, are taken within the controlled environment, i.e., walking down the runway." *Id.* at 5:13-22. Additionally, "[p]rior to recording, a visual reference may be referred to gauge apparel sizes" to ensure accurate representation. *Id.* Lennon's approach ensures that the virtual-wearable items incorporated into the composite image are visually and proportionally suited to the user's body type, as opposed to being generic or one-size-fits-all. Ex.1002 ¶ 137.

Accordingly, a POSA would understand that Lennon teaches using characteristics of the virtual-wearable item (e.g., size/style) to enhance the realness of the displayed composite. Ex.1002 ¶ 138. This understanding is consistent with the specification of the '517 Patent, which states that "[c]haracteristics associated with a virtual-wearable item (e.g., type of fabric, texture of fabric, and/or other characteristics) may be utilized in rendering … to enhance the realness." Ex.1001, 5:21-26, 13:22-26; Ex.1002 ¶¶ 137-38.

5. Independent Claim 13 and Associated Dependent Claims

a. Claim 13

(i) 13[pre]: "A method for allowing a user to simulate wearing real-wearable items, the method being performed by one or more hardware processors configured by machine-readable instructions, the method comprising:"

Claim 13 is an independent claim directed to a method for the same subject matter as claim 1. Specifically, the preamble is disclosed for the same reasons discussed above for element 1[pre] and 1[a]. *See supra* Sec. VII.A.4.a.(i)-(ii); Ex.1002 ¶ 139.

(ii) 13[a]: "obtaining, from a client computing platform, a live video feed;"

As discussed above regarding element 1[b], this limitation is disclosed. *See supra* Sec. VII.A.4.a.(iii); Ex.1002 ¶ 140.

(iii) 13[b]: "recognizing a position and/or orientation of one or more body parts of a user within the

live video feed, the one or more body parts including a first body part;"

As discussed above regarding element 1[c], this limitation is disclosed. *See supra* Sec. VII.A.4.a.(iv); Ex.1002 ¶ 141.

(iv) 13[c]: "providing a virtual-outfitting interface for presentation to the user via the client computing platform, the virtual-outfitting interface including two or more separate portions simultaneously presented in the virtual-outfitting interface, the two or more separate portions including a main display portion and an icon that is overlaid upon the main display portion,"

As discussed above regarding element 1[d], this limitation is disclosed. *See supra* Sec. VII.A.4.a.(v); Ex.1002 ¶ 142.

(v) 13[d][1]: "wherein the main display portion includes a composite video feed that incorporates the live video feed of the user and a first virtual-wearable item, and"

As discussed above regarding element 1[e][1], this limitation is disclosed. *See supra* Sec. VII.A.4.a.(vi); Ex.1002 ¶ 143.

(vi) 13[d][2]: "wherein a position, size, and/or orientation of the first virtual-wearable item is determined such that the first virtual-wearable item moves within the main display portion according to the position and/or orientation of the user within the live video feed so that the user appears to be wearing the first virtual-wearable

item in real time in the main display portion; and"

As discussed above regarding element 1[e][2], this limitation is disclosed. *See supra* Sec. VII.A.4.a.(vii); Ex.1002 ¶ 144.

(vii) 13[e]: "providing a social-networking tool graphically presented in the virtual-outfitting interface, the social-networking tool allowing the user to interface with one or more social-networking services with which the user is associated."

As discussed above regarding element 1[f], this limitation is disclosed. *See supra* Sec. VII.A.4.a.(vii); Ex.1002 ¶ 145.

b. Claim 14: "The method of claim 13, wherein interfacing with a given social-networking service includes sharing a snapshot with one or more contacts of the user within the given social-networking service."

As discussed above regarding claim 2, this limitation is disclosed. *See supra* Sec. VII.A.4.b; Ex.1002 ¶ 146.

c. Claim 15: "The method of claim 13, wherein interfacing with a given social-networking service includes providing a comment on a profile page of the user within the given social-networking service, wherein the comment on the profile page includes one or both of a link or information associated with a real-wearable item corresponding to the first virtual-wearable item."

As discussed above regarding claim 3, this limitation is disclosed. *See supra* Sec. VII.A.4.c; Ex.1002 ¶ 147.

d. Claim 18: "The method of claim 13, wherein:

the first virtual-wearable item includes one or both of

a virtual garment or a virtual accessory; or

the first virtual-wearable item visually represents a corresponding real-wearable item."

As discussed above regarding claim 6, this limitation is disclosed. *See supra* Sec. VII.A.4.d; Ex.1002 ¶ 148.

e. Claim 19: "The method of claim 13, wherein the two or more separate portions of the virtual-outfitting interface further include a conferencing portion, wherein providing the virtual-outfitting interface for presentation further comprises:

providing video of one or more other users for display within the conferencing portion, wherein the conferencing portion is configured to facilitate video communications between the user and at least one of the one or more other users via the one or more social-networking services with which the user is associated."

As discussed above regarding claim 7, this limitation is disclosed. *See supra* Sec. VII.A.4.e. In particular, the paragraphs above have explained how Gray discloses to a POSA an interface including a conferencing portion configured to display video of one or more other users. *Id.* In view of Gray's disclosure, the POSA would have implemented a step of "providing video of one or more other users for display within the conferencing portion" to achieve that functionality in the interface. Ex.1002 ¶ 149.

B. Ground 2: YouCam 3 User's Guide and YouCam 3 Publication Video Render Obvious Claims 1-3, 6-7, 9-10, 12-15, and 18-19

1. YouCam 3 User's Guide and YouCam 3 Publication Video

YouCam 3 is a webcam software application made by Cyberlink Corp. It integrates real-time video processing, facial tracking, and multimedia output to enhance live video user experience with interactive visual effects. The relevant software functionalities that are documented and disclosed in YouCam 3's "Official Publications" (including the "User's Guide" and the "Publication Video") address the problems identified in the '517 Patent.

This is apparent from YouCam 3 Publication Video showing live footage of a user in real-time wearing virtual wearables in an augmented reality (AR) display. Ex.1007 at 0:20-0:38. It discloses a video interface that tracks the user's face outfitted with the virtual wearables, rendering these items in real time relative to the user's facial orientation. *Id.* It also discloses a live video feed and social networking integration. *Id.* at 1:02-1:12.

Further, YouCam 3 User's Guide elaborates on the features and functions disclosed in the Publication Video. The User's Guide describes that YouCam 3 generates a composite video that appears as if the user is wearing virtual garments. Ex.1006 at 2, 9-10. It is a real-time overlay of virtual accessories, avatars, and filters those onto a live webcam video that can be both displayed to the user and recorded. *Id.*

The YouCam 3 Official Publications also disclose face tracking functionality that positions and maintains the alignment of augmented reality (AR) items (e.g., gadgets and avatars) relative to facial features in the live video feed. Ex.1006 at 2, 9-10; Ex.1007 at 0:20-0:38. This enables dynamic rendering of wearable items such as hats or masks that maintain consistent spatial relationships with the user's head position and orientation. *Id.* These overlays are rendered as if they are worn by the user, and they are updated in real time as the user moves, thereby creating a visually realistic augmented effect. *Id.* YouCam3's use of face tracking to apply real-time effects such as hat and avatars over a live video feed meets the '517 Patent's composite video and motion tracking requirements, where a virtual item (e.g., garment/accessory) is visually integrated with the user in real time. Ex.1006 at 2, 9-10; *see also* Ex.1007 at 0:20-0:38.

The software described in the User's Guide uses a "virtual driver" to interface with third-party messaging clients, including Windows Live Messenger, Skype, Yahoo Messenger, and AOL Instant Messenger, effectively substituting the raw webcam feed with a processed video stream containing effects. Ex.1006 at 2-3, 6. It supports multiple operating modes, including standalone, instant messaging (IM), and mirror mode, each designed to accommodate a use case such as recording, live chatting, or personal viewing. *Id.* at 4; *see also* Ex.1007 at 1:02-1:12.

The YouCam 3 Official Publications also disclose a searchable and browsable gallery of visual effects—avatars, gadgets, frames—that users select to appear on themselves in the video feed. Ex.1006 at 1; Ex.1007 at 0:47-0:49. It features the functions of the '517 Patent's item-selection module.

In addition to visual enhancements, the User's Guide also shows that YouCam 3 provides photo snapshot and video capture capabilities, and allows direct upload of photos and videos to Facebook and YouTube, enabling integration with social-networking services. Ex.1006 at 4, 18-20, 22; Ex.1007 at 1:02-1:12. Ex.1002 ¶¶ 150-56.

2. Motivation to Combine YouCam 3 Official Publications

A POSA would have been motivated to consult both the teachings of YouCam 3 User's Guide and YouCam 3 Publication Video to implement a real-time virtual try-on system as claimed in the '517 Patent. Ex.1002 ¶ 157. The YouCam 3 Official Publications describe the same commercial product and are complementary in nature. Ex.1036 at 1-3. The Publication Video visually demonstrates how the product functions during real-world use. The User's Guide provides technical details and operational instructions. A POSA would naturally study both the User's Guide and Publication Video together to fully understand the functionality of the described software. Ex.1002 ¶ 157.

Collectively, the YouCam 3 Official Publications disclose core functionality directly aligned with the claims of the '517 Patent, including: (1) capturing live webcam video of the user; (2) applying graphical effects—such as virtual wearable items (e.g., hats, masks)—that track and respond to the user's facial orientation; (3) rendering the resulting composite video feed in real time; and (4) capturing snapshots and videos of the composite imagery and sharing them via social media platforms like Facebook and YouTube. Hence, the features of the '517 Patent were described and disclosed.

Moreover, a POSA would understand that YouCam 3 Official Publications disclose an interface of wearable virtual items, allowing users to browse, select, and virtually wear—functionality equivalent to the item-selected portions recited in the '517 Patent. Although the claims of the '517 Patent do not require commercial store / retail settings, even if they did, the technology disclosed in YouCam3 Official Publications, e.g., real-time compositing and graphical augmentation, was highly transferable to virtual retail environments. A POSA would recognize the functionalities disclosed in the Official Publications beyond novelty entertainment. Ex.1002 ¶¶ 158-59.

The commercial incentive was clear: By the mid-to-late 2000s, there was an industry trend toward virtual try-on systems for enhancing on-line shopping experiences. *See, e.g.*, Ex.1001, 1:30-42. Integrating a consumer-facing AR system

like YouCam 3 with a virtual retail platform would allow potential shoppers to visualize themselves wearing branded clothing or accessories before purchase. Afterall, in YouCam 3, users were actually able to see what they looked like wearing a limited number of hats and masks. Therefore, a POSA would have readily recognized the value of using the technology disclosed in YouCam 3 Official Publications, e.g., face tracking, AR composite imagery, and social media integration, to other scenarios including virtual try-on e-commerce. *Id*. Adapting the software features described in the Official Publications to support virtual clothing selection requires no inventive ingenuity. Ex.1002 ¶ 160. Such adaptation would also yield no more than predictable use of prior art elements according to their established functions, and such adaptation would be obvious for a POSA under *KSR*. *See* 550 U.S. at 417.

Furthermore, these YouCam 3 Official Publications included sufficient detail so that a POSA could understand how the relevant features function. Ex.1002 ¶¶ 161-66. The technical components used in YouCam 3 were well within the routine knowledge and capabilities of a POSA at the time of the invention of the ’517 Patent. *Id.* For example, computer vision and digital image/video processing literature discloses well known techniques for image/frame segmentation, motion estimation, object tracking, image-based rendering and 3D sensing and object pose estimation, among others—all of which are well known and familiar to a POSA. *Id.*

Accordingly, after studying YouCam 3 User's Guide and Publication Video, a POSA would not only have been motivated to combine the references, but a POSA facing the same problems identified in the '517 Patent would also have been able to implement or imitate the relevant features described in these materials without undue difficulty and experimentation. *Id.*

3. Independent Claim 1 and Associated Dependent Claims

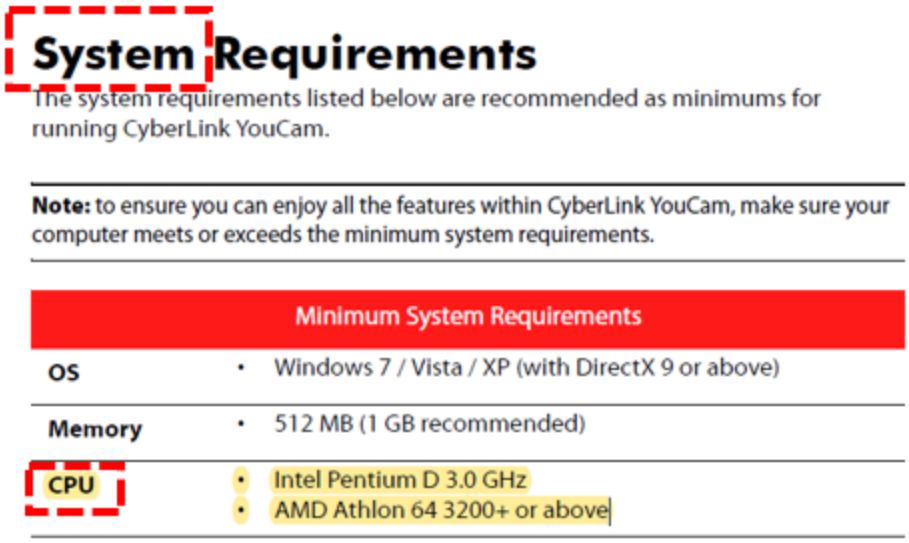
a. Claim 1

(i) 1[pre]

YouCam 3 User's Guide discloses this feature. Ex.1002 ¶ 167. The User's Guide describes that YouCam 3 "uses a virtual driver to easily work with most webcam devices and messaging software, allowing [users] to perform the following functions: … ***add accessory effects, such as hats and masks*** to your webcam image." Ex.1006 at 2 (emphasis added); *see also* Ex.1007 at 0:20-0:38.

(ii) 1[a]

The User's Guide discloses that YouCam 3 is a software program that is in the form of machine-readable instructions. Ex.1006 at 1; Ex.1007 at 0:05-0:19. When installed and activated, YouCam 3 configures hardware processors (e.g., CPUs) to execute the machine-readable instructions. Ex.1002 ¶ 168.



System Requirements

The system requirements listed below are recommended as minimums for running CyberLink YouCam.

Note: to ensure you can enjoy all the features within CyberLink YouCam, make sure your computer meets or exceeds the minimum system requirements.

Minimum System Requirements	
OS	• Windows 7 / Vista / XP (with DirectX 9 or above)
Memory	• 512 MB (1 GB recommended)
CPU	• Intel Pentium D 3.0 GHz • AMD Athlon 64 3200+ or above

Ex.1006 at 5 (annotated); *see also* Ex.1007 at 2:10-2:19 (narration: "YouCam 3 has been designed for the latest PC Hardware including touch systems, HD webcams, and ultra-light netbooks.").

(iii) 1[b]

The User's Guide discloses that YouCam 3 includes three operating modes: stand alone mode, IM mode, and mirror mode. Ex.1006 at 4. In stand alone mode, users can "record and upload videos to YouTube, and e-mail and print photos" and access surveillance features, which are exclusive to this mode. *Id.* In instant messaging (IM) mode, YouCam functions as a "virtual driver" that automatically launches "when a webcam session is started …." *Id.* at 4, 2. Mirror mode "is designed to act just like a mirror if ever you need it." *Id.* at 4; *see also* Ex.1007 at 0:20-0:38, 1:19-1:45.

Regardless of the mode, users can "capture live webcam video" or "take a desktop capture" either automatically in IM mode or by manually "launch[ing] CyberLink YouCam" application. Ex.1006 at 4. The User's Guide also states: "With CyberLink YouCam you can instantly capture a live webcam video." *Id.* at 12. The User's Guide includes multiple references to YouCam's real-time rendering capabilities across different application scenarios. *See, e.g.*, *id.* at 3 (under "Video Image and Preview," stating that YouCam can "[e]nhance your webcam video image using the auto-lighting and video noise reduction features."); *id.* at 9 ("CyberLink YouCam has a lot of effects that you can apply to your live webcam image. When applied, a user viewing your webcam will instantly see the effect."); *id.* at 8 ("When CyberLink YouCam is launched manually from the start menu, desktop shortcut or from the icon in the system tray, you can view webcam video in stand alone mode."); *id.* at 12 ("CyberLink YouCam will begin to capture the current webcam video."); *see also generally* Ex.1007.

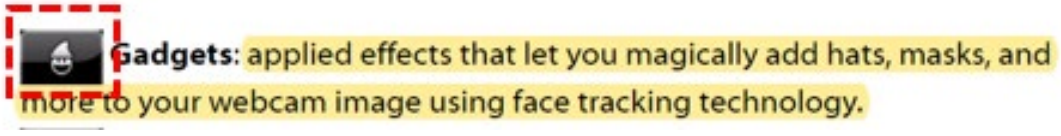
As such, a POSA would have understood that the User's Guide and the accompanying YouCam 3 Publication Video collectively disclose this limitation. Ex.1002 ¶¶ 169-71.

(iv) 1[c]

YouCam 3 includes "face tracking technology." Ex.1006 at 2; Ex.1007 at 0:20-0:38. "Face tracking technology … enhances avatars, enables auto-zoom,

enables the use of gadgets, and more." Ex.1006 at 2. The User's Guide explains that YouCam 3's "gadget" function lets "[users] magically add hats, masks, and more to [the users'] webcam image." *Id.* at 9. An example YouCam 3 interface is reproduced below.

Id. at 1 (annotated).



Id. at 9 (annotated).

As discussed above, YouCam 3 User's Guide discloses virtual wearable items—such as hats and masks—among its supported visual effects. *Id.* The system,

as described in the User's Guide, uses machine-readable instructions (i.e., software), to detect the position and orientation of at least one body part—specifically, the user's face—within the live webcam video stream. Ex.1002 ¶¶ 172-73.

See also, e.g., Ex.1007 at 0:31-0:37 (narration: "headgear gadgets use face tracking to keep masks, hats … exactly where you are."). As shown in the screen capture above, "gadgets," graphically overlay the virtual item to specific regions of the user's face. It demonstrates recognition of the position and/or orientational of body parts such as the face. This functionality requires the identification and tracking of facial features (i.e., one or more body parts) to render the virtual effects accurately. *Id*.

Additionally, the User's Guide discloses an "auto face detection" feature that allows the system to "track and follow your face as it moves within the webcam

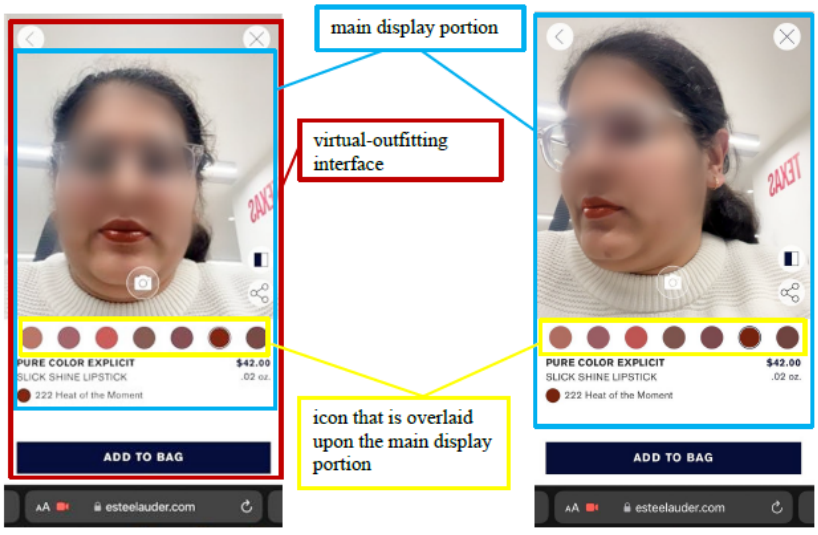
image." Ex.1006 at 9. Accordingly, the YouCam features described in the User's Guide and demonstrated in the Publication Video can automatically detect and track the user's face in real time, including zooming and dynamic repositioning as the face moves. *Id.*; Ex.1007 at 0:20-0:38. Ex.1002 ¶¶ 172-74.

(v) 1[d]

As explained above in Ground 1, the icon in this claim reads on any icon if it is "overlaid upon the main display portion." *See supra* Sec. VII.A.4.a.(v). This is also explicitly consistent with the specification's description of icons. Ex.1001, 5:62-66; *see also id.* at 13:63-14:3.

The Patent Owner applies this limitation the same way as it submitted a claim chart in the Eastern District of Texas demonstrating this.

Claim 13	THE ESTÉE LAUDER COMPANIES, INC. (Virtual Try-on)



Ex.1011 at 20. The Patent Owner asserted that the "icon" associated with color options on the main display meets this limitation. *See id.*

As shown below, the User's Guide discloses that YouCam 3's virtual-outfitting interface (i.e., boxed in dark red) includes two or more separate portions, and the two portions are simultaneously presented within the same display interface. (i.e., virtual-outfitting interface).

Ex.1006 at 1 (annotated); *see also* Ex.1007 at 0:47-0:52 (same interface). YouCam 3's interface, as shown in the User's Guide and as demonstrated in the Publication Video, includes a main display portion (boxed in light blue) and at least one icon (boxed in yellow) that is overlaid upon the main display portion. *Id.* The User's

Guide similarly shows, in YouCam 3's interface, use of a "system tray icon" (Ex.1006 at 3), an emotion effect icon (*id.* at 9), a "snapshot" icon (*id.* at 11), and a "burst" icon (*id.* at 12). Ex.1002 ¶¶ 175-77.

(vi) 1[e][1]

YouCam 3's main display, as shown in the YouCam 3 Publication Video, includes a composite video feed that incorporates the live video feed of the user and a first virtual-wearable item (i.e., the police hat).

Ex.1007 at 0:31-0:37; *see also* Ex.1006 at 7; Ex.1002 ¶ 178.

(vii) 1[e][2]

YouCam 3 User's Guide discloses this limitation. Ex.1002 ¶¶ 179-80. In the "Webcam Effects" section, the User's Guide explains: "YouCam has a lot of effects that you can apply to your live webcam image. When applied, a user viewing your

webcam will instantly see the effect. These effects are also applied to any photo snapshots or webcam video you are recording at the time." Ex.1006 at 9; *see also* Ex.1007 at 0:20-0:38. YouCam 3's gadget effects include virtual accessories—such as hats, masks, and facial overlays—that track the user's face in real-time and appear within the live video feed. *Id.* The following screenshots from the Publication Video illustrate these face-tracking effects.

Ex.1007 at 0:24.

Id. at 0:25.

As shown in the Publication Video, the gadgets are dynamically aligned with the user's facial features, so they remain properly positioned as the user moves. *Compare* Ex.1007 at 0:24 *with id.* at 0:25. This demonstrates that continuous determination and recalculation of a virtual wearable item's position, size, and/or orientation (e.g., to compensate for head tilt) of the item to move within the main display portion in synchronization with the user's position and/or orientation in the live video feed. *Id.* The resulting visual effect is that the user appears to be wearing the virtual item in real time in the main display. *Id.*

(viii) 1[f]

This feature is disclosed in YouCam 3 User's Guide. As shown below, an example user interface from the User's Guide depicts a social-networking tool, e.g., Facebook, graphically presented within the virtual-outfitting interface.

Ex.1006 at 1 (annotated); *see also* Ex.1007 at 1:02-1:12. The User's Guide also states that the user "can upload captured photos directly to [the user's] Facebook page from within CyberLink YouCam." Ex.1006 at 19.

Uploading Photos to Facebook

You can upload captured photos directly to your Facebook page from within CyberLink YouCam. To upload captured photos to Facebook, do this:

1. Select the photos in the captured content area that you want to upload to Facebook.
2. Select the button. The Upload Media to Facebook wizard opens, displaying the authorization window.
3. Follow the steps outlined in the window to grant CyberLink YouCam permission to upload media to your Facebook page.
4. Once the authorization and connection process is complete, enter the details about your photos as follows:

5

Id. (annotated). After activation, the Facebook button in YouCam 3's interface allows the user to authenticate, authorize, and upload media—such as captured snapshots or videos—to the user's social network services (e.g., "upload media to [the user's] Facebook page"). *Id.* at 20; Ex.1002 ¶ 181.

b. Claim 2

An example YouCam 3 interface shown in the User's Guide illustrates this limitation.

Ex.1006 at 1 (annotated). The screenshot above demonstrates that YouCam 3 interfaces with social-networking services (e.g., Facebook) and enables users to share snapshots directly to their social profiles. *Id.* at 18-20; *see also* Ex.1007 at

1:02-1:12, 1:19-1:25. The User's Guide further explains that the users "can instantly take a photo snapshot (in the JPG, BMP or PNG format) of the current webcam video[.]" Ex.1006 at 11.

Sharing snapshots and captured videos to Facebook inherently makes them visible to the user's contacts (e.g., Facebook friends). Ex.1002 ¶¶ 182-83. YouCam 3 further teaches that its interface with social media allows the user to "select who has permissions to view these photos once [the media] are uploaded," confirming that the media is shared with one or more contacts within the social-networking site. Ex.1006 at 20; *id.*

c. Claim 3

When snapshots and captured videos are uploaded to social-networking services (e.g., Facebook or YouTube), the User's Guide explains that the YouCam 3's interface prompts the user to provide information associated with the uploaded content, e.g., "Description," "Location," and "Caption." Ex.1006 at 20.

- **Description**: enter in a short description for the photos you are uploading.
- **Location**: enter in the location where the photos were taken.
- **Privacy**: select who has permissions to view these photos once they are uploaded.
- **Caption**: enter a caption that will display under all of the uploaded photos.

5. Select **Upload** to begin uploading your photos to Facebook. Select the **Finished** button once your photos are uploaded.

Id. (annotated); *see also* Ex.1007 at 1:02-1:12, 1:19-1:25. Accordingly, when media is uploaded to Facebook or YouTube, the associated comments (e.g., description,

location, or caption) posted to the user's profile page include information related to the virtual-wearable item. Ex.1002 ¶ 184-86.

Moreover, a POSA at the time would have been familiar with the well-known capabilities of social media websites at the time, such as commenting, posting, and linking. *Id.* For example, it was known to a POSA that platforms like Facebook allowed users to include text captions or comments alongside uploaded media on their profile pages. *Id.*

Therefore, when asked to apply technologies described in YouCam 3—along with its social-networking functionalities—to a virtual try-on (VTO) context, a POSA would have implemented an interface function to enable users to provide information about a corresponding real-world item when uploading a snapshot of a virtual hat or accessory. *Id.* And, it would have been an obvious design improvement to link VTO content to real-world product information, particularly given that users at the time routinely posted shopping links in social media comments and profile updates. *Id.* Thus, combining YouCam 3's image-sharing functionality with the routine user behavior of providing descriptive information and links about shared items would have been an obvious extension of conventional user interface design. *Id.*

d. Claim 6

As discussed above with respect to element 1[c], the User's Guide shows that YouCam 3's virtual-wearable gadgets include a virtual garment or a virtual accessory—e.g., the police hat and a gas mask. Ex.1006 at 1. The visual effect of such gadgets is demonstrated in YouCam 3 Publication Video, a screenshot of which appears below. As shown in the screenshot, the police hat visually simulates a corresponding real-wearable hat.

Ex.1007 at 0:31-0:37; *see also* Ex.1006 at 1; Ex.1002 ¶ 187.

e. Claim 7

The YouCam 3 User's Guide discloses that the software is designed to operate in conjunction with instant messaging platforms that support video conferencing. Ex.1006 at 4. Specifically, the YouCam 3 User's Guide identifies three different

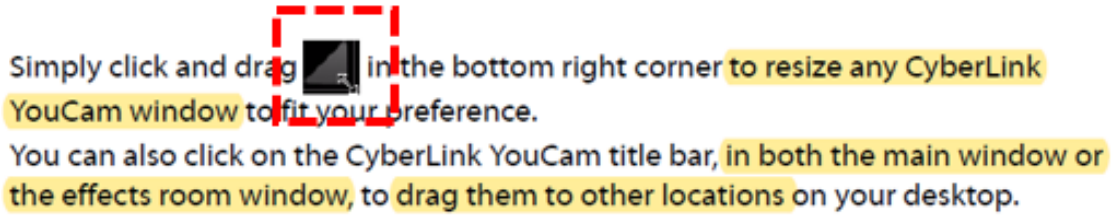
operating modes, "stand alone mode, IM mode and mirror mode." *Id.* In addition to manual launch, YouCam 3 can launch "automatically when [users] begin a webcam session with an instant messaging software." *Id.* In the IM (Instant Messaging) mode, the User's Guide explains, "when a webcam session is started, [YouCam 3] will launch in the smaller IM (instant messaging) mode," and further notes that "[s]hared document viewing is only available within IM mode." *Id.*

Ex.1007 at 1:45-1:54 (narration: "YouCam is also a great tool for making live presentations. …you could share PowerPoint files and photos while you chat."); *see also* Ex.1006 at 21 ("you can share files during a webcam session); *id.* at 22 (in a "teacher mode," "the webcam video and a larger view of the shared portions of the document are shown simultaneously.").

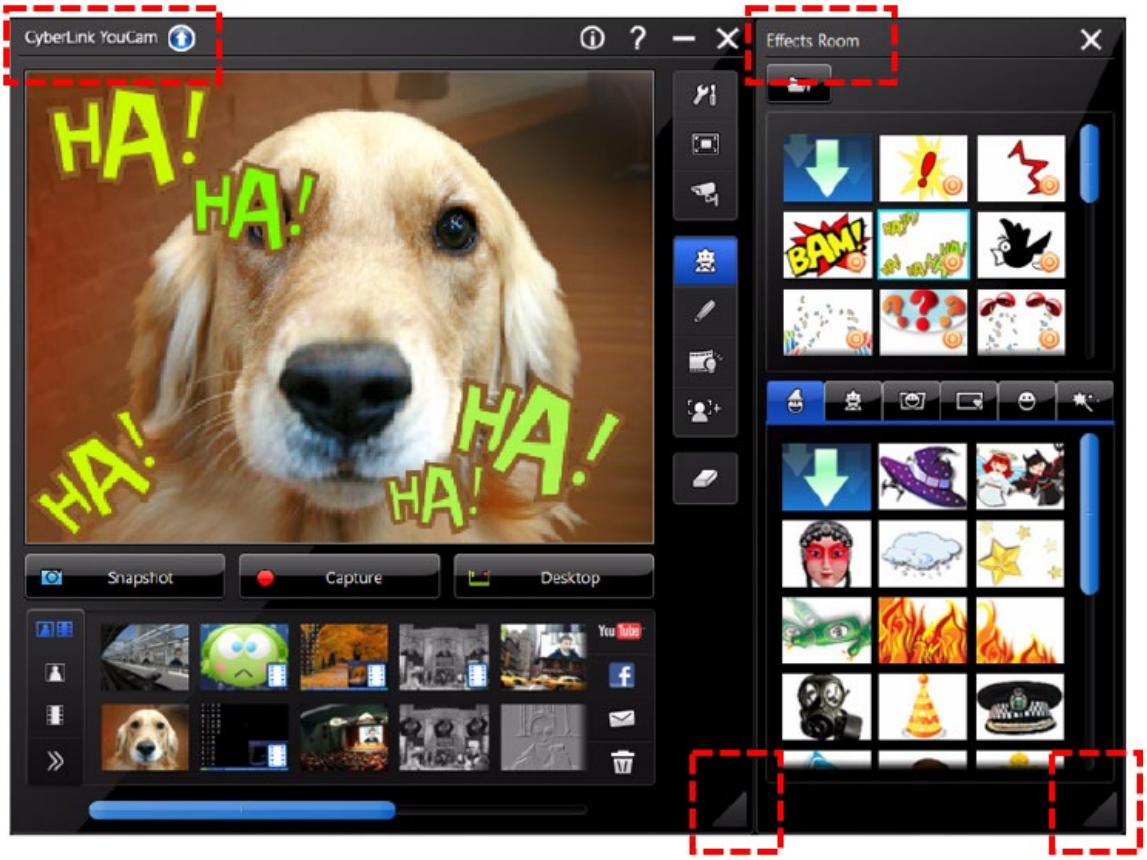
As can be seen above, social-networking services, e.g., Windows Live Messenger, were already known at the time to support video chat. Ex.1006 at 4; Ex.1002 ¶¶ 188-89. When operating in IM mode, YouCam 3's user interface integrates with the IM software and includes a conferencing portion configured to display video of one or more other users, thereby enabling activities such as live presentations. An IM service qualifies as a type of social-networking service. *Id.* Accordingly, this limitation is disclosed by YouCam 3 when considered in view of the knowledge possessed by a POSA. *Id.*

f. Claim 9

YouCam 3 User's Guide teaches that its user interface's size and position are adjustable and dynamic. "When within both stand alone or IM mode, [users] can resize the CyberLink YouCam user interface to suit [their] requirements." Ex.1006 at 4.



Id. (annotated).



Id. at 1 (annotated); *see also* Ex.1007 at 0:47-0:52 (same interface). Ex.1002 ¶ 190.

g. Claim 10

As discussed above with respect to element 1[e][2], a POSA would have recognized that YouCam 3 User's Guide and Publication Video disclose determining the position, size, and/or orientation of the first virtual-wearable item based on the position and/or orientation of the one or more body parts of the user recognized within the live video feed. *See supra* Sec. VII.B.3.a.(vii).

Ex.1007 at 0:24.

Id. at 0:25.

As illustrated above, the virtual-wearable items, or "gadgets," are not randomly positioned; rather, they are placed at a specific location that is relative to the user's facial features. Ex.1002 ¶¶ 191-94. For example, a virtual hat must be

positioned slightly above the center of the user's detected face to align with the top of the head, and a mask must align with the eyes, nose, and mouth region. *Id.*

Accordingly, a POSA would understand that realistic display of hats and masks requires a "predetermined offset"—a preset spatial relationship between the virtual effect and the tracked facial features. *Id.* This offset is fundamental to creating the appearance that the virtual item is "worn" by the user on the screen. *Id.* Similarly, the orientation of the virtual-wearable item (e.g., the tilt of a hat) must follow the orientation of the user's head to maintain proper relative alignment and reinforce the visual effect of being "worn." *Id.*

Consequently, it would have been obvious to a POSA that YouCam's gadget effect—by creating the appearance of users wearing the virtual-wearable items through the use of face tracking technology—disclose the claimed limitations. *Id.*

h. Claim 12

The User's Guide discloses a system that overlays virtual-wearable items (e.g., hats, masks) onto a user's live video feed using face tracking. Ex.1006 at 2, 9; *see also* Ex.1007 at 0:20-0:38. The implementation of virtual items that maintain proper alignment and movement with the user's face inherently enhances perceived realism. Ex.1002 ¶ 195. The system, as described in the User's Guide, clearly utilizes characteristics of the virtual-wearable item, e.g., the item's shape, size, orientation, and placement logic, when rendering the item within the main display portion. *Id.* For

example, a police hat is not simply merely rendered as a static image; rather, it is anchored to the user's head and rotates in response to the head's movements. Similarly, a gas mask aligns with the user's full face. *Id.* The User's Guide further confirms that "[g]adgets are applied effects that let you magically add hats, masks, and more to your webcam image using face tracking technology." Ex.1006 at 9.

A POSA would have understood that rendering an augmented reality (AR) overlay in real time with facial alignment—including size and/or orientation adaptation—was a well-established technique for increasing the realism of a virtually rendered item. Ex.1002 ¶¶ 195-96. Accordingly, this limitation is disclosed. *Id.*

4. Independent Claim 13 and Associated Dependent Claims

a. Claim 13

(i) 13[pre]

Claim 13 is an independent claim directed to a method for the same subject matter as claim 1. Specifically, the preamble is disclosed for the same reasons discussed above for element 1[pre] and 1[a]. *See supra* Sec. VII.B.3.a.(i)-(ii); Ex.1002 ¶ 197.

(ii) 13[a]

As discussed above regarding element 1[b], this limitation is disclosed. *See supra* Sec. VII.B.3.a.(iii); Ex.1002 ¶ 198.

(iii) 13[b]

As discussed above regarding element 1[c], this limitation is disclosed. *See supra* Sec. VII.B.3.a.(iv); Ex.1002 ¶ 199.

(iv) 13[c]

As discussed above regarding element 1[d], this limitation is disclosed. *See supra* Sec. VII.B.3.a.(v); Ex.1002 ¶ 200.

(v) 13[d][1]

As discussed above regarding element 1[e][1], this limitation is disclosed. *See supra* Sec. VII.B.3.a.(vi); Ex.1002 ¶ 201.

(vi) 13[d][2]

As discussed above regarding element 1[e][2], this limitation is disclosed. *See supra* Sec. VII.B.3.a.(vii); Ex.1002 ¶ 202.

(vii) 13[e]

As discussed above regarding element 1[f], this limitation is disclosed. *See supra* Sec. VII.B.3.a.(vii); Ex.1002 ¶ 203.

b. Claim 14

As discussed above regarding claim 2, this limitation is disclosed. *See supra* Sec. VII.B.3.b; Ex.1002 ¶ 204.

c. Claim 15

As discussed above regarding claim 3, this limitation is disclosed. *See supra* Sec. VII.B.3.c; Ex.1002 ¶ 205.

d. Claim 18

As discussed above regarding claim 6, this limitation is disclosed. *See supra* Sec. VII.B.3.d; Ex.1002 ¶ 206.

e. Claim 19

As discussed above regarding claim 7, this limitation is disclosed. *See supra* Sec. VII.B.3.e; Ex.1002 ¶ 207.

VIII. CONCLUSION

Petitioner has shown by a preponderance of the evidence that claims 1-3, 6-7, 9-10, 12-15, and 18-19 of the '517 Patent are invalid. Petitioner requests institution of *inter partes* review and cancellation of these claims.

Dated: June 26, 2025

Respectfully submitted,

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CERTIFICATION OF WORD COUNT UNDER 37 C.F.R. § 42.24(d)

Pursuant to 37 C.F.R. § 42.24(d), the undersigned hereby certifies that the word count for the foregoing *Petition for Inter Partes Review* of U.S. Patent No. 10,482,517 totals 13,721, excluding the parts exempted by 37 C.F.R. § 42.24(a). Accordingly, this Petition is under the word count limit of 14,000 words.

This word count was calculated by using the built-in word-count tool in Microsoft Word 365, the software used to prepare the document.

Dated: June 26, 2025

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true copy of the foregoing PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,482,517 and supporting materials (Exhibits 1001-1048 and Power of Attorney) have been served this 26th day of June 2025, by Federal Express delivery service on Patent Owner at the correspondence address for the attorney of record for the '517 Patent shown in USPTO PATENT CENTER:

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