IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Jacobs et al.

Appl. No.: 15/907,614

Filed: Feb. 28, 2018

U.S. Patent No. 10,021,380
Issue Date: Jul. 10, 2018
Reexamination Control No. 90/019,781

Title: Faster state transitioning for continuous adjustable 3Deeps filter spectacles using multi-layered variable tint materials

Group Art Unit: 3992

Examiner: Menefee, James A

Confirmation No: 1045

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PATENT OWNER STATEMENT PURSUANT TO 37 C.F.R.§ 1.530

Enclosed herewith is VDPP LLC's Patent Owner Statement pursuant to 37 C.F.R § 1.530 with respect to the challenge of claims 1-10 of U.S. patent No. 10,021,380 filed by Third Party Requester, Unified Patents, LLC.

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Patent Owner's Exhibits

Exhibit No.	Description
2001	Image registration in Wikipedia https://en.wikipedia.org/wiki/Image_registration
2002	Image Averaging and Noise Removal https://evidentscientific.com/en/microscope resource/tutorials/digital-imaging/processing/imageaveraging#:~:text=Image averaging is a digital...
2003	Mozhgan Bayat, A novel method in adaptive image enlargement, EURASIP Journal on Advances in Signal Processing 2012, 2012:197

I. INTRODUCTION

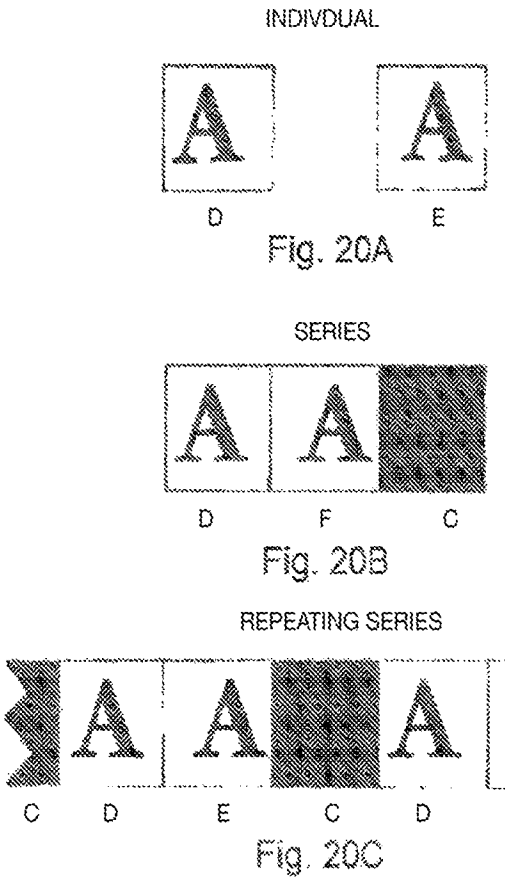
U.S. patent No. 10,021,380 ("the '380 Patent") is directed to methods for producing an appearance of continuous movement using a finite number of images. Ex. 1001, 2:33-35. The method entails repetitive presentation to the viewer of at least two substantially similar image pictures alternating with a third visual interval or bridging picture to create the appearance of continuous, seamless and sustained directional movement. Ex. 1001, 8:46-58.

A claimed method contemplates a more fluid or natural illusion of continuous movement from a finite number of image pictures by blending adjacent pictures together on an additional picture-frame and placing the blended picture between the pictures in sequential order. The two image pictures (A, B) are now blended with each other to produce (A/B). Ex. 1001, 9:21-28.

FIGS. 20A-20C (reproduced below) illustrate three pictures that are employed in the method of the invention. Picture D and Picture E both illustrate capital A, however, in Picture D, the capital letter A is aligned with the center of the frame while in Picture E the A is offset to the right of the center of the frame. Ex. 1001, 49:21-29.

The three pictures are placed side-by-side to form a series. Finally, the series is copied a plurality of times to form a repeating series. The repeating series in FIG. 20 *c* creates the optical illusion that the letter A is moving from left to right. Ex. 1001, 49:32-35.

The method is further developed for providing the illusion of depth in motion pictures, the '380 Patent further describes that "if one letter A were to be slightly different in size from the other, the letter would appear to be moving in depth, i.e. given a third dimension. Ex. 1001, 49:32-35.



Figs. 20A-20C - '380 Patent

The '380 patent describes the methods of producing frames of different sizes by shrinking and expanding. "Picture-frames A and B may be near-identical or have only some elements with close visual correspondence. Similarity of shape and location within the frame are important factors determining the effect. .....While matching image elements in pictures A and B must occupy almost the exact screen-space in order to combine properly, it will be the differences between them (within close tolerances) that will produce and determine the character of movement and dimensionality. Computer graphics cut-and-paste techniques can be used to select and place, shrink and expand and otherwise manipulate matching elements (from any source) into effective screen-locations relative to each other." Ex. 1001, 56:62-57:14.

Requester Challenges the patentability of Claims 1-10 of the '380 Patent based on five (5) different alleged prior art references as follows:

U.S. Patent 5,351,082 ("Kasagi"); Ex. 1018

Yamada, Yuichiro, Advanced Method for Improvement of Obscure Video Image, Proceedings IEEE 33rd Annual 1999 lnt'l Carnahan Conference on Security Tech. (Cat. No.99CH36303), Madrid, Spain, 1999, pp. 440-445 ("Yamada"), Ex. 1019;

U.S. Patent 7,030,902 ("Jacobs"); Ex. 1020

U.S. Publication 2009/0184916 ("Miyazaki") Ex. 1021, and

U.S. Publication 2002/0054241 ("Compton") Ex. 1022

In the Request for reexamination, Requester alleged six (6) different combinations of the prior art references raised a substantial new question of patentability. In the Order Granting Request for *Ex Parte* Reexamination issued on Jan. 24, 2025, the Examiner concluded that five (5) alleged grounds raised a substantial new question of patentability, as shown below.

Grounds	**References**	**Claims**	**SNQ**
1&2	Kasagi	1 and 6	Yes
3&4	Yamada	1 and 6	Yes
5	Jacobs	1-4 and 6-9	No
6	Miyazaki and Compton	1-10	Yes

II. Claim Construction

During reexamination ordered under 35 U.S.C. 304, and also during reexamination ordered under 35 U.S.C. 257, claims are given the broadest reasonable interpretation consistent with the specification and limitations in the specification are not read into the claims *(In re Yamamoto,* 740 F.2d 1569, 222 USPQ934 (Fed. Cir. 1984)).

In accordance with these principles, Patent Owner considers the plain and ordinary meaning of each term of the '542 Patent as it would have been understood by one skilled in the art as of Feb. 28, 2018.

III. THE ASSERTED PRIOR ART

A. Kasagi (Ex. 1018)

Kasagi is directed to a signal-converting device for converting video signals to change the size of the image formed of the video signals. Ex. 1018, 1:10-15.

The signal-converting device comprises: signal-converting means for converting some of pixel signals forming an image sequentially input at scanning intervals, into new pixel signals the number of which is proportional to a desired magnification at which the image is enlarged or reduced, without changing an energy sum of these pixel signals and without distorting the waveform of the video signal formed of the pixel signals. Ex. 1018, 2:22-32.

The level-correcting means for correcting level errors in the new pixel signals supplied from the signal-converting device comprises signal-compensating means for compensating by adding components to the new pixel signals output from the signal-converting means, said components having been lost while the signal-converting means is converting the pixel signals into new pixel signals. Ex. 1018, 2:34-42.

B. Yamada (Ex. 1019)

Yamada is directed to methods developed and used for video surveillance by the Police Communications Research Center of Japan. Ex. 1019, Page 440.

One of the first improvements Yamada presents is an "improvement of sampling ability" using an analog-digital converter that can enlarge "the horizontal resolution up to 1,024 pixels," as shown in Figure 4 (reproduced right), where a picture at 640x480 pixels was enlarged to 1024x480 pixels to obtain an expanded image of the license plate number. Ex. 1019, Page 442.

Yamada also address several issues in video surveillance images with the use of superimposing. Combining two image frames of the same scene can reduce the effects of "random noise signal" and supply missing color information for images that were previously too dark. Ex. 1019, Page 443.

C. Miyazaki (Ex. 1021)

Miyazaki provides an image display apparatus capable of reducing a hold blur in accordance with circumstances. A black inserting process for inserting a black display area into a display screen in a liquid crystal display panel **2** according to at least one of substance of a video signal in an original frame and brightness of viewing environment for user is performed. Ex. 1021, Abstract.

An image display apparatus has video signal processing means for performing a predetermined video signal process on a plurality of original frames along time base, and display means for displaying a video image on the basis of a video signal subjected to the video signal process. In this case, the display means is hold-type display means. In addition, the image display apparatus is configured to perform a black inserting process of inserting a black display area into a display screen in the display means according to at least one of the substance of the

video signal in the original frame and luminance of a user's viewing environment. Ex. 1021,¶ [0024].

D. Compton (Ex. 1022)

Compton provides an image processor arranged in operation to generate an interpolated video signal from a received video signal representative of an image. Ex. 1022, ¶ [0008].

Interpolation is performed in order to change the shape of an image. This could be as simple as a linear stretch, or a shape change determined in accordance with a more complicated higher order function. Using interpolation, each pixel of a new stretched image will be derived from a collection of pixels from a source image. To achieve this stretch, an image processor calculates a sub-pixel position in the source for each new pixel. This is used to control an interpolation filter. The calculation can be thought of as providing an error, or a vector with respect to which a source image can be divided into horizontal and vertical components, each of which can be independently interpolated. The error/vector has two parts, an integer shift and a fraction of an integer. The fractional integer part represents a sub-pixel position within the source image. To access data at a sub pixel position, an interpolation filter is used. This requires several consecutive sample pixels of the image data which are applied at several taps within the interpolation filter. To perform the integer part of the error/vector, line delays or sample delays are used to form a pipeline from which consecutive pixels of the image are derived. This provides access to several consecutive pixels vertically or horizontally. If more consecutive pixels are available for interpolation than are required for the interpolation process, then an integer shift on the consecutive pixels can be performed, by selecting a set of consecutive pixels from the greater set of available pixels. Ex. 1022, ¶ [0034].

IV. REQUESTER HAS NOT SUCCESSFULLY RAISED A SUBSTANTIAL NEW QUESTION OF PATENTABILITY FOR THE GROUNDS ADVANCED IN THE REQUEST, AND THE REQUEST SHOULD BE DENIED

A. Requester Fails to Establish that Kasagi Raises a Substantial New Question of Patentability for Challenged Claims 1 And 6 in SNQs 1&2

1. Claim 1

The Requester has divided claim 1 into elements for consideration as follows:

[1.0] A method for generating modified video, the method comprising:

[1.1] acquiring a source video comprising a sequence of image frames, each of the image frames being associated with a respective chronological position in the sequence;

[1.2] identifying a first image frame associated with a first chronological position in the sequence of the source video and a second image frame associated with a second chronological position in the sequence of the source video;

[1.3] expanding the first image frame to generate a modified first image frame, wherein the modified first image frame is different from the first image frame;

[1.4] expanding the second image frame to generate a modified second image frame, wherein the modified second image frame is different from the second image frame;

[1.5] combining the modified first image frame and the modified second image frame to generate a modified combined image frame, the modified combined image frame having first and second opposing sides defining a first dimension and third and fourth opposing sides defining a second dimension; and

[1.6] displaying the modified combined image frame.

Kasagi discloses each step of claim 1 separately in different embodiments, the steps in separate embodiments have different objectives, it does not necessarily suggest that they should be used together in a single process.

Requester proffers that Kasagi discloses two separate embodiments: zooming with superimposing embodiment and TV-system conversion embodiment.

With respect to zooming with superimposing embodiment, Requester contends that "Kasagi discloses the enlarging of images followed by the "addition of superimposing means," but Kasagi only provides one example of superimposing for 'picture-in-picture (PIP)'. Requester presents the following explanation of how a POSIT would understand Kasagi. Request, Page 30.

PIP methods typically combine images from one video with images from a separate video, since Kasagi only provides the single PIP example, Requester submits the following additional argument. Request, Pages 30-31.

Kasagi notes that the "PIP method is totally equivalent" to other methods of "superimposing." The '380 Patent recognizes its methods as covering the known technique of "superimposing," and Kasagi discloses "superimposing." Merely because Kasagi provides an example of PIP does not detract from Kasagi's use of the term "superimposing," which would cause a POSITA to immediately envision the breadth of blending techniques that term encompasses, including the combination of sequential frames. Request, Page 31.

Nevertheless, to the extent more is needed, it would have at least been obvious to employ the superimposing effect to combine sequential images. Kasagi immediately follows the "Addition of Superimposing Means" disclosure with the application of its invention to TV-System Conversion; the video obtained is represented by a five-frame sequence of frames GI-GS

provided within a 0.2 second period, and those frames are combined to provide a six-frame sequence, Ml-M6, to be displayed within that same 0.2 second period. Request, Page 31.

Accordingly, to the extent "forming a composite image" did not immediately cause a POSITA to envision the combination of two sequential images, Kasagi's explicit disclosure of combining sequential images would have suggested it. Request, Pages 31-32.

The argument of Requester shows that in zooming with superimposing embodiment, Kasagi only provides the single PIP example of "superimposing," since PIP methods typically combine images from one video with images from a separate video, Requester admits that zooming with superimposing embodiment does not disclose "combination of sequential frames."

Requester uses "combination of sequential frames" in the '380 Patent as a roadmap that the elements would have fit into the zooming with superimposing embodiment, which is an exercise in impermissible hindsight analysis.

Requester combines the element "combination of sequential frames" in TV-system conversion embodiment into the zooming with superimposing embodiment, but function of the element "combination of sequential frames" in Kasagi and the '380 Patent is different.

In the '380 Patent, the function of "combination of sequential frames" is to produce more fluid or natural illusion of continuous movement from a finite number of image pictures, as the '380 Patent describes:

A more fluid or natural illusion of continuous movement from a finite number of image pictures is provided by using two of each of the three pictures and repeating the cycle of the pairs sequentially, or by blending adjacent pictures together on an additional picture-frame and placing the blended picture between the pictures in sequential order. '380 Patent, 46:43-48.

In the '380 Patent, the function of "expanding the image frame" (slightly different in size from the other) is to produce illusion of depth in motion pictures, as the '380 Patent describes:

The method is further developed for providing the illusion of depth in motion pictures, the '380 Patent further describes that "if one letter A were to be slightly different in size from the other, the letter would appear to be moving in depth, i.e. given a third dimension. '380 Patent, 49:32-35.

While matching image elements in pictures A and B must occupy almost the exact screen-space in order to combine properly, it will be the **differences between them** (within close tolerances) that will produce and determine the character of movement and **dimensionality**. '380 Patent, 57:5-10.

Thus, the method of claim 1 artificially composes depth as well as ongoing movement in making Eternalisms. '380 patent, 56:14-16.

Kasagi does not articulate the function of "expanding the image frame" in the zooming with superimposing embodiment. A POSIT would understand that the function of "expanding the image frame" is to provide expanded image frame to accommodate other no expanded image frame in order to obtain picture-in-picture image.

In the TV-system conversion embodiment, the function of "combination of sequential frames" is to generate six CCIR-M frame signals M1 to M6 from five CCIR-G frame signals every 0.2 seconds.Ex.1018, 36:16-34.

The rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination yielded nothing more than predictable results to one of ordinary skill in the art.

KSR, 550 U.S. at 416, 82USPQ2d at 1395; If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art. MPEP § 2143(A).

Functions of "expanding the image frame" and "combination of sequential frames" of Kasagi are different than those of the '380 Patent, the combination of zooming with superimposing embodiment and TV-system conversion embodiment yielded unpredictable results (Eternalisms composing depth as well as ongoing movement), Thus, the combination of zooming with superimposing embodiment and TV-system conversion embodiment of Kasagi is not sufficient to render claim 1 the '380 Patent obvious.

Further, Requester contends that "Additionally, there are only a finite number of combinations that could result in the superimposing of one image with another: (1) the combination of two unrelated images; (2) the combination of two images from the same video but not sequential, and (3) the combination of two sequential images from the same video. It would have been **obvious to try** any of these combinations to achieve various effects." Request, Page 32.

In *Rolls-Royce, PLC v. United Tech. Corp.,* 603 F.3d 1325, 95USPQ2d 1097 (Fed. Cir. 2010), the Federal Circuit addressed the obvious to try rationale in the context of a fan blade for jet engines. The Federal Circuit pointed out that in a proper obvious to try approach to obviousness, the possible options for solving a problem must have been "known and finite." Id. at 1339, 95 USPQ2d at 1107(citing Abbott, 544 F.3d at 1351, 89 USPQ2d at 1171). In this case, nothing in the prior art would have suggested that changing the sweep angle as Rolls-Royce had done would have addressed the issue of end wall shock. Thus, the Federal Circuit concluded that changing the sweep angle "would not have presented itself as an option at all, let alone an option

that would have been obvious to try." *Id.* The decision in Rolls-Royce is a reminder to Office personnel that the obvious to try rationale can properly be used to support a conclusion of obviousness only when the claimed solution would have been selected from a finite number of potential solutions known to persons of ordinary skill in the art. MPEP § 2143(I) (E).

Since nothing in the prior art would have suggested that combination of sequential frames as the '380 Patent had done would have produced Eternalisms composing depth as well as ongoing movement, that is, "combination of sequential frames" is not a potential solution to address the issue of Eternalisms, Thus, 'combination of sequential frames" would not have presented itself as an option at all, let alone an option that would have been obvious to try.

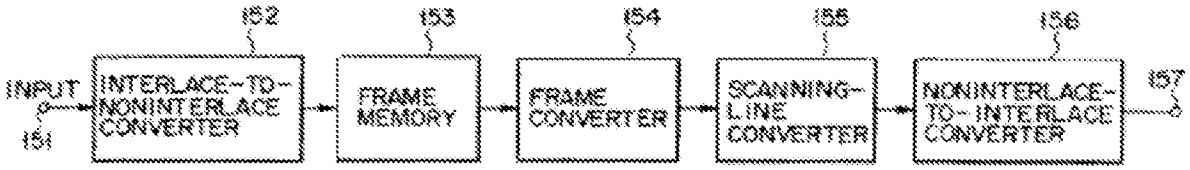
Therefore, claim 1 of the '380 Patent is neither anticipated nor rendered obvious by zooming with superimposing embodiment or obvious over zooming with superimposing embodiment in view of TV-system conversion embodiment of Kasagi.

With respect to TV-system conversion embodiment, Requester contends that TV-system conversion embodiment discloses 'combination of sequential frames.' In that disclosure, the video obtained is represented by a five-frame sequence of frames GI-GS provided within a 0.2 second period, and those frames are combined to provide a six-frame sequence, Ml-M6, to be displayed within that same 0.2 second period. Request, Page 31.

Kasagi also recognized that his disclosure for expanding frames could be applied to TV-system conversions. Kasagi's example is for converting a CCIR-G video (24 fps, 625 scanning lines) to CCIR-M video (30 fps, 525 scan lines), i.e., reducing image size and combining frames. But Kasagi recognizes various conversions may be needed (e.g., going from CCIR-M to CCIR-G, for example), and he explicitly describes how to expand frame size, providing the tables needed for expanding an image frame from 525 scan lines to 625 scan lines. Request, Page 32.

As to the order of steps in the method, Requester contends that claim 1 recites an implicit order, first expanding ... image frames to obtain modified image frames and then combining the modified image frames. Request, Page 33.

Kasagi's disclosed embodiments are presented as modular steps. The method disclosed in Figure 39 (reproduced below) contemplates first converting interlaced video signals into non-interlaced frames and storing them in a frame memory for the needed tv-system conversion (steps 152-153), then combining the frames in a frame converter to obtain the needed number of frames (step 154), then expanding (or reducing) the frames in a scanning line converter to obtain the needed frame size (step 155), and finally converting the frames (which are now in the needed size and number) to an interlaced signal for output to the viewer. Request, Page 33.



F I G. 39

Fig. 39 of Kasagi

It would have been obvious to switch steps 154 and 155, to first expand the images and then combine them, for a number of reasons. First, it would have been obvious to try the finite number of identified predictable solutions for addressing the TV-system conversion issue: (1) combine the two images first and then expand (or reduce) the image frame or (2) expand (or reduce) the image frame first and then combine the two images. MPEP § 2143(I)(E). Kasagi

provides an example of the first, but a POSITA would have immediately envisioned the other option. Request, Pages 33-34.

Requester concedes that in the TV-system conversion embodiment, Kasagi does not disclose order of steps (first expanding ... image frames to obtain modified image frames and then combining the modified image frames) as required by claim 1 of the '380 Patent and then use the "obvious to try" reasoning to switch the order of steps.

Patent Owner respectively submit that Kasagi discloses reducing image size step and combining frames step in the example of converting a CCIR-G video (24 fps, 625 scanning lines) to CCIR-M video (30 fps, 525 scan lines), while in the example of converting a CCIR-M video to CCIR-G video, Kasagi only discloses expanding image size step but does not disclose combining frames step since there is no combining frames step in the process of converting a CCIR-M video to CCIR-G video. The reason is as follows:

In the CCIR-G video, 24 frames are transmitted and received every second, each frame consisting of 625 scanning lines, while CCIR-M video, 30 frames are transmitted and received every second, each frame consisting of 525 scanning lines. Ex,1018, 35:58-68. In order to convert a CCIR-G video to CCIR-M video, a five-frame sequence of frames GI-G5 provided within a 0.2 second period, and those frames are combined to provide a six-frame sequence, Ml-M6, to be displayed within that same 0.2 second period. Specifically, in the five-frame sequence of frames GI-G5, the signal M1 is generated from the signal G1, the signal M2 from the signals G1 and G2, the signal M3 from the signals G2 and G3, the signal M4 from the signals G3 and G4, the signal M5 from the signals G4 and G5, and the signals M6 from the signal G5. Ex1018, 36: 16-34, Fig.38.

The cited portion of Kasagi shows that the function of combining adjacent image frames is to increase the frames within a video, Kasagi does not disclose decrease the frames within a video by combining adjacent image frames, and a POSITA would not envision combining adjacent image frames to decrease the frames within a video.

Converting CCIR-G video to CCIR-M video needs to increase the frames (24 frames per second to 30 frames per second) and decrease the size of the frames (625 scanning lines to 525 scanning lines); processing of the converting includes step of combining adjacent image frames and step of reducing frames. On the other hand, converting CCIR-M video to CCIR-G video needs to decrease the frames (30 frames per second to 24 frames per second) and expand the size of the frames (525scanning lines to 625 scanning lines), Although Kasagi discloses expand the size of the frames, it is not necessarily that the converting CCIR-M video to CCIR-G video needs combining adjacent image frames step, since the function of combining adjacent image frames is to increase the frames, not to decrease the frames.

If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir.1984)

The operation of Kasagi's TV-system conversion includes converting CCIR-G video to CCIR-M or Converting CCIR-M video to CCIR-G. Kasagi discloses that converting CCIR-G video to CCIR-M needs step of combining adjacent image frames and step of reducing frames, the proposed combination of step of combining adjacent image frames and step of expanding frames can not converting CCIR-G video to CCIR-M or converting CCIR-M video to CCIR-G. Since converting CCIR-G video to CCIR-M need to increase the number of frames and reducing each of the frames, converting CCIR-M video to CCIR-G need to decrease the number of frames

and expanding each of the frames, both of the two converting method conflict with the proposed modified method, that is, combination of combining adjacent image frames (increasing the number of frames) and expanding frames. That is, the proposed modification renders the prior art unsatisfactory for its intended purpose- TV-system conversion, such that even if all elements of the claimed invention had been taught by the prior art separately, the claims would not have been obvious because the combination render the prior art unsatisfactory for its intended purpose.

Thus, the proposed combination of step of combining adjacent image frames and step of expanding frames (taking no account of order of the steps) would not have been obvious at all, let alone an option of order that would have been "obvious to try."

Therefore, Kasagi does not anticipate or render claim 1 obvious.

2. Claim 6

Claim 6 is similar to claim 1 but styled as an apparatus claim rather than a method claim. Claim 6 contains similar elements of Claim 1. Similar to the arguments above, Kasagi does not teach the combination of combining adjacent image frames and expanding frames as required by claim 6, and therefore Kasagi does not anticipate or render claim 6 obvious.

B. Requester Fails to Establish that Yamada Raises a Substantial New Question of Patentability for Challenged Claims 1, And 6 in SNQs 3 And 4

1. Claim 1

Similar to Kasagi, Yamada discloses each step of claim 1 separately in different embodiments, the steps in the separate embodiments have different objectives, it does not necessarily suggest that they should be used together in a single process.

Requester proffers that Yamada discloses “enlargement of sequential images” in the “General Darkness Correction and General Picture Enlargement.” Yamada then explains that combining "several images" is "effective [for] an image which is very dark." A POSITA would have understood that Yamada disclosed the combination of the "sequential" enlarged images were how a vehicle "in the shade of a tree" was identified. Request, page 37.

Requester further contends that: Yamada at least renders obvious the use of combining the enlarged images in order to see portions of the image darkened by the "shade of a tree" at least because Yamada suggests that combining the images by "registrating several images and averaging" the values can accomplish the stated goal of providing image data where an image is dark or lacking RGB information. Moreover, both of Yamada' s examples in Figures 6 and 7 contemplate the combination of two images to obtain an improved combined image, further suggesting that such a superimposing of the enlarged images would provide the stated result of identifying a vehicle even "in the shade of a tree." Indeed, this example is provided under the heading "General Darkness Correction and General Picture Enlargement" and is followed by the explanation of how to correct dark images by combining them further suggesting to a POSITA that the enlarged images were combined to achieve the stated result. Request, page 37.

Patent owner respectively submits that although Yamada separately discloses “enlargement of sequential images” in the “General Darkness Correction and General Picture Enlargement” measure, and "registering several images and averaging" in the “Registration of Imagines” measure, Yamada does not disclose the “combination” of the "sequential enlarged images.” Both of Yamada' s examples in Figures 6 and 7 (reproduced below) only show the effect of "registering several images and averaging" and are irrelevant to “enlarged images.”

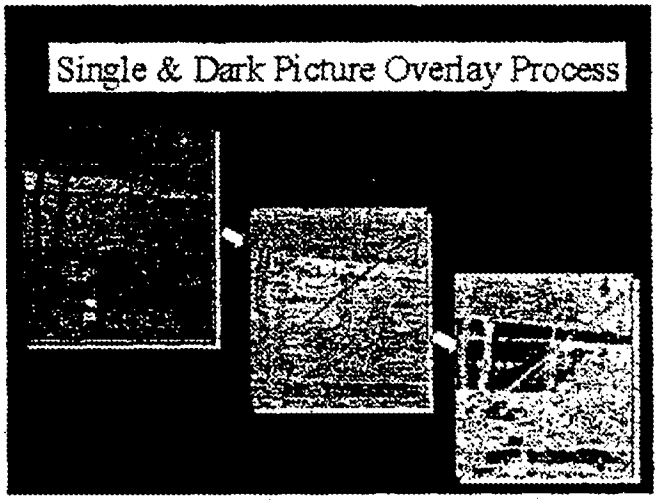


Figure 6 the effects of superimposing

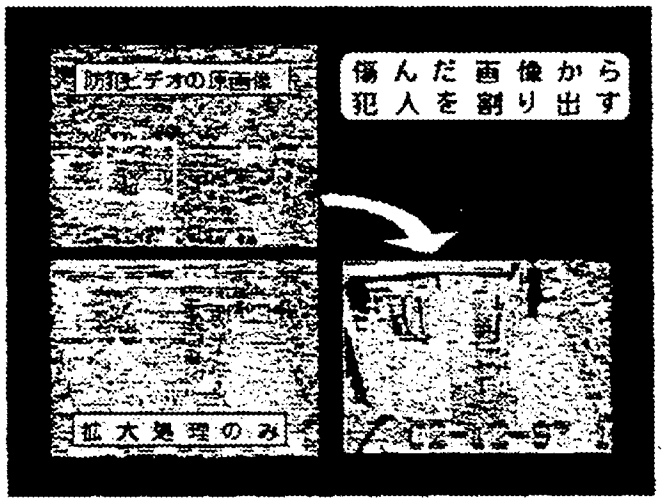


Figure 7 the recovery of the declined image

Figs 6 and 7 of Yamada

Under the heading "General Darkness Correction and General Picture Enlargement," Yamada discloses that the method of "enlargement of sequential images of an identical part" itself, (not including combining the enlarged sequential images) can succeed in identification of a vehicle passing in the shade of a tree. Ex,1019, Page 443.

In the "Registration of Imagines" measure (which is independent from the method of "enlargement of sequential images of an identical part"). Yamada discloses that the method of

"registering several images and averaging," which includes combining images (explained below) can improve the quality of image with respect to random signal. Figures 6 and 7 prove that method of "registering several images and averaging" effective to an image which is very dark and is lacking RGB signals." Ex1019, Page 443. Figures 6 and 7 are irrelevant to "vehicle passing in the shade of a tree."

Registering several images and averaging them is a technique used in image processing to enhance image quality, reduce noise, and improve details. Image registration is the process of transforming different sets of data into one coordinate system. Data may be multiple photographs, data from different sensors, times, depths, or viewpoints. (Ex2001, Image registration in Wikipedia). Images averaging is a digital image processing technique that is often employed to enhance video images that have been corrupted by random noise. The algorithm operates by computing an average or arithmetic mean of the intensity values for each pixel position in a set of captured images from the same scene or view field. (Ex2002, Image Averaging and Noise Removal). In the process of Registering and averaging, multiple images of the same scene are aligned by compensating for shifts, rotations, scale differences, and distortions, and then the aligned images are combined by averaging pixel values across the stack.

In typical image registration and averaging workflows, images are processed at their original resolution, which means the images need not to be enlarged before registering and averaging process, because (1) enlarging before registration does not improve alignment accuracy. (2) interpolating (enlarging) before alignment may introduce artifacts and reduce precision. (Ex. 2003, Mozhgan Bayat, A novel method in adaptive image enlargement, EURASIP Journal on Advances in Signal Processing 2012, 2012:197)

It is improper to combine references where the references teach away from their combination. *In re Grasselli,* 713 F.2d 731, 743, 218 USPQ 769, 779 779(Fed. Cir. 1983).

Since image enlargement may introduce artifacts (such as blurring and zigzagging) and reduce precision of registering and averaging, the combination is undesirable, that is, the references teach away from their combination.

Therefore, it is not obvious to combine "enlargement of sequential images" in the "General Darkness Correction and General Picture Enlargement" measure and "registering several images and averaging" in the "Registration of Imagines" measure.

Further，requester uses "obvious to try" reasoning to argue the combination as follows:

Additionally, it would have been obvious to try combining the images at least because there were only a finite number of options Yamada discloses that could provide "General Darkness Correction" to identify a vehicle "in the shade of a tree": (1) using the "device to check and modify analog images" that "can correct the dark image whose the video signal is weak, and (2) registration of images to superimpose (combine) them (Even in these two options, the second one (combining the images) is most likely to obtain the stated result of analyzing "sequential images" to identify a vehicle "passing in the shade of a tree." A POSIT would have understood that those sequential images likely contained different visible portions of the vehicle, and so generally lightening each image would not necessarily improve visibility of the vehicle under option 1. Essentially, the shade caused each frame to contain missing pieces of the image, and by combining the sequential images showing the vehicle with different illuminations as it passed, a complete picture of the vehicle could be obtained. Request, page 38.

First, as set forth above, Yamada provides only one method to identify a vehicle "in the shade of a tree," that is "enlargement of sequential images," "Registration of Imagines" is irrelevant to identify a vehicle "in the shade of a tree."

Second, Yamada provides several other methods of image processing such as improvement of sampling ability, frame signal filtering, blur correction, and focus correction. Ex.1019, Pages 442-443. The number of options to combine the six methods is much larger than Requester proposes. For Example, the number of options to combine any of the two methods of image processing in order is $P_6^2 = 30$, not taking into account other combinations such as combining any of the three(the number of options is $P_6^3 = 120$) or four methods in order.

In a proper obvious to try approach to obviousness, the possible options for solving a problem must have been "known and finite." *Rolls-Royce, PLC v. United Tech. Corp.,* 603 F.3d 1325, 95USPQ2d 1097 (Fed. Cir. 2010).

Since nothing in the prior art would have suggested that combination of enlarged sequential frames as the '380 Patent had done would have produced Eternalisms composing depth as well as ongoing movement, that is, "combination of enlarged sequential frames" is not a potential solution to address the issue of Eternalisms, Thus, 'combination of sequential frames" would not have presented itself as an option at all, let alone an option that would have been obvious to try.

Further, in the reasoning of "obvious to try," Requester alleges the function of "registering several images and averaging" by mistake as combining missing pieces of the image to obtain complete picture, and concludes that "A POSIT would have understood that those sequential images likely contained different visible portions of the vehicle, and so generally lightening each image would not necessarily improve visibility of the vehicle under option 1.

Essentially, the shade caused each frame to contain missing pieces of the image, and by combining the sequential images showing the vehicle with different illuminations as it passed, a complete picture of the vehicle could be obtained."

As set forth above, In the process of registering and averaging, multiple images of the same scene are aligned by compensating for shifts, rotations, scale differences, and distortions, and then the aligned images are combined by averaging pixel values across the stack, the function of registering and averaging is to enhance image quality, reduce noise, not to combine missing pieces of the image to obtain complete picture, the option of "enlargement of sequential images" and then "Registration of Imagines" is not a known for solving a problem of identify a vehicle "in the shade of a tree."

Therefore, Yamada does not anticipate or render claim 1 obvious.

2. Claim 6

Claim 6 is similar to claim 1 but styled as an apparatus claim rather than a method claim. Claim 6 contains similar elements of claim 1. Similar to the arguments above, Yamada does not teach the combination of step of combining adjacent image frames and step of expanding frames as required by claim 6, and therefore Yamada does not anticipate or render claim 6 obvious.

C. Requester Fails to Establish that Miyazaki and Compton Raises a Substantial New Question of Patentability for Challenged Claims 1-10 in SNQ 6

1. Claim 1

To argue that the combination of Miyazaki and Compton renders the '380 Patent obvious, Requester proffers that Miyazaki provides disclosure for most of the elements of the challenged claims. In particular, Miyazaki discloses two important aspects: combining frames (frame

interpolation) and adding bridge frames. Request, page 41. On the other hand, Compton discloses interpolation of the pixels within a frame "in order to change the shape of an image." Request, page 46.

Regarding the motivations to combine and/or modify enlarging frames before interpolation, Requester contends that Miyazaki recognized the known need to change the format of a video from one system to another. But Miyazaki focused only on the frame rate conversion portion of that reformatting. Miyazaki did not directly address the issues with the different frame sizes that various systems present. Request, pages 47-48.

To remedy the deficiency, Requester argues that Miyazaki explicitly contemplated conversions to the 120 Hz motion-compensated high-performance televisions only from a video signal originating in an NTSC system. Ex. 1021, ¶ [0004]; The NTSC system is also known as the CCIR-M system, i.e., the 525-scanning line system that was discussed in Kasagi. A POSITA would have understood (as evidenced by Kasagi), that in order to apply the interpolation technique more broadly to provide video to countries that use the CCIR-G system, the image frames would need to first be expanded to 625 scanning lines. Request, page 48.

Requester then concludes that, a POSITA would have been motivated by the known need in Miyazaki for providing video with interpolated frames for high performance televisions, the disclosed method of how to apply interpolation to NTSC/CCIR-M/525-line frames, and the known fact that other countries would need 625-line frames to add Compton's teachings of how to change the shape, i.e., expand the image frames, to the correct image size so that when the frames are put through Miyazaki's interpolation methods (or even the known prior art interpolation methods), frames of the correct frame rate and correct frame size would have been supplied to those viewers. Additionally, the market forces of supplying video for high

performance televisions in the CCIR-G TV-system market would have prompted a POSITA to apply Compton to Miyazaki to obtain the frames of the correct size for the CCIR-G market for processing through Miyazaki' s interpolation methods, resulting in the predicable variation of video suited for the high-performance televisions in the CCIR-G market. Request, page 48.

The Argument is based not only on Miyazaki and Compton, but also on Kasagi. The reasoning of combining and/or modify enlarging frames before interpolation is that a POSITA would have been motivated by the known need or market forces to convert NTSC/CCIR-M frames to CCIR-G frames based on Miyazaki, Compton, and Kasagi.

As set forth above, converting CCIR-M video to CCIR-G video needs to decrease the number of frames per second (30 frames per second to 24 frames per second) and expand the size of the frames (525scanning lines to 625 scanning lines), Although Kasagi and Compton disclose expand the size of the frames, Miyazaki and Kasagi do not disclose how to decrease the number of frames per second (Miyazaki only disclose increase the number of frames per second (NTSC system to 120HZ through interpolation), Kasagi only disclose increase the number of frames per second (CCIR-G to CCIR-M through combining adjacent image frames)). It is not necessarily that converting CCIR-M video to CCIR-G video needs combining adjacent image frames step, since the function of combining adjacent image frames is to increase the number of frames, not to decrease the number of frames.

Thus, the proposed modification (enlarging frames before interpolation) can not convert CCIR-M video to CCIR-G video, since interpolation will increase the number of frames per second, contrary to decreasing the number of frames per second required by the conversion. Therefore Claim 1 would not have been obvious over Miyazaki, Compton, and Kasagi because the combination renders the prior art unsatisfactory for its intended purpose.

Therefore, the combination of Miyazaki and Compton does not render claim 1 obvious.

2. Claims 2-5

Claims 2-5 depend from claim 1 and are not obvious over Miyazaki in view of Compton for at least the same reasons.

3. Claim 6

Claim 6 contains similar elements of Claim 1. Similar to the arguments above, the combination of Miyazaki and Compton does not render claim 1 obvious.

4. Claims 7-10

Claims 7-10 depend from claim 6 and are not obvious over Miyazaki in view of Compton for at least the same reasons.

V. CONCLUSION

Therefore, the Examiner should find all Challenged Claims are patentable over the prior art cited in the Reexamination Request and conclude this reexamination proceeding.

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing document is being served via email[1] on the below listed persons on this day of March 24, 2025.

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