

IPR2024-00960
Patent 7,486,807

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner

v.

138 EAST LCD ADVANCEMENTS LIMITED,
Patent Owner

Case No. IPR2024-00960
U.S. Patent No. 7,486,807

PATENT OWNER'S PRELIMINARY RESPONSE

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I. Preliminary Statement

The Petition filed by Google LLC (“Google” or “Petitioner”) falls significantly short of demonstrating a reasonable likelihood of success on either of the asserted grounds. The Petition fails to locate each limitation of the challenged claims in the prior art, misconstrues the teachings of the prior art, and never explains why a person of ordinary skill in the art (“POSITA”) at the time of the invention would have been motivated to combine or modify the asserted references to achieve the claimed invention.

In Ground 1, the Petition argues that U.S. Patent Application Publication No. 2002/0188602 to Stubler et al. (“Stubler”) renders claims 1-14¹ (the “Challenged Claims”) of the ’807 patent obvious. In Ground 2, the Petition argues that the combination of Stubler and U.S. Pat. No. 6,038,333 to Wang (“Wang”) (collectively the “Asserted References”) renders dependent claims 2-5 and 9-12 of the ’807 patent obvious.

With respect to Ground 1, the Petition fails to demonstrate that any of the Asserted References, alone or in combination, disclose “an image storing section for storing the image which is supposed to be classified and retrieved together with a keyword in a database and an object of the image being previously contained in

¹ Claims 1, 7, and 8 of the ’807 patent are independent.

the database,” as recited in claim 1. Claims 7 and 8 contain similar limitations, which the Petition also fails to demonstrate are obvious in light of the Asserted references.

With respect to Ground 2, the Petition only challenges the dependent claims of the '807 patent. Because the Petition fails to demonstrate a reasonable likelihood that any independent claim is unpatentable under Ground 1, the Petition necessarily fails to demonstrate that any dependent claim is unpatentable under Ground 2.

The Board should deny institution because the Petition has failed to meet its burden of showing a reasonable likelihood that any of the Challenged Claims is unpatentable.

II. Factual Background of the '807 Patent

The '807 patent, titled “Image Retrieving Device, Method for Adding Keywords in Image Retrieving Device, and Computer Program Therefor,” issued on February 3, 2009, from a January 23, 2004 application, with Toshinori Nagahashi as the named inventor. The '807 patent claims priority to Japanese patent application 2003-020805, filed January 29, 2003.

A. Summary of the '807 patent inventions

The '807 claims recite improvements in the computing field of classifying and retrieving digital image files to facilitate adding and retrieving images using

keywords. In particular, the '807 claims improve the way that image retrieving devices associate and store manipulable keyword data characterizing digital image files. The '807 claimed inventions improve the way that prior image retrieving devices operate and handle keywords. Specifically, the inventive image retrieving device stores data representing objects in digital images with associated keywords in a database, detects data representing objects in new, incoming image data, proposes keywords for the new, incoming image data to the user based on the detected data representing objects in the incoming image data, and updates the keyword metadata for stored images based on the user's response. The '807 claimed inventions' implementation of a computing system with an improved data structure—particularly the way in which the inventions detect objects in new, incoming image data and propose associated keywords based on the detection and the user update operations—improve the '807 computing systems compared to other approaches. The '807 claimed inventions improve upon, for example, prior computing systems that required users to provide their own keywords to associate with, or describe, digital image data, which could result in inconsistent keywords being associated with images containing the same objects.

B. Technical problems addressed by the '807 patent inventions

The '807 patent addresses several technical problems known in the field of classifying and retrieving digital image files with characterizing data. The '807

patent describes five known devices and techniques for manipulating characterization-based metadata in a database for storing digital images, but notes the limitations of each of these prior art systems. EX1001 at 3:1-48. The '807 patent identifies a need for new, improved devices and techniques for computing systems that associate and store manipulable keyword metadata with digital image files.

C. Technical solutions and benefits provided by the '807 patent inventions

The '807 patent claims a technical solution to these problems: a new, improved computing system including a database component and related techniques for associating and storing manipulable keyword metadata with digital image files and objects appearing in the digital image files. The improved device stores, in a database, digital images and associated keywords describing objects in the images, detects objects (such as people) in the image when the image is classified, and efficiently proposes keywords for a newly inputted image by detecting and matching an object in the newly inputted image with an object in the database. *Id.* at 3:51-4:4.

According to the '807 patent, “images which are supposed to be classified and detected are saved in [a] database together with the[ir] keywords by the image storing section.” *Id.* at 4:5-7. The system can acknowledge “a new predetermined

object which is inputted” as part of a new image, for example, a human or an automobile. *Id.* at 4:7-10. Upon detection of a predetermined object, “the keywords which relate to the object are proposed to the user” by the system. *Id.* at 4:10-14. The user can confirm, add, or correct the keywords proposed by the improved system. *Id.* at 4:13-16.

After receiving and reading an image, the system’s human detecting condition inputting section “sets up a condition for determining whether or not a human is contained in an image.” *Id.* at 8:15-17. For example, the system detects a human face either by detecting a face image or face color. *Id.* at 8:17-20. The face image detecting section “detects . . . whether or not a face image is contained in the image by analyzing the image.” *Id.* at 8:23-25. The ’807 patent describes particular rules for carrying out the face detection, including through frequency analysis or matching with pre-stored patterns. *Id.* at 8:25-31.

If the system detects a face, it applies further rules to “check whether or not a similar face image to the detected face image is contained” in the database; for instance, the system may match images using image density information. *Id.* at 8:60-67. If the system detects a similar face in a stored image, the system uses a priority-based ruleset to retrieve associated keyword metadata from the database to present to the user for confirmation or modification. *Id.* at 9:2-6. When prompted with specific proposed keywords retrieved from the database, the user can select or

correct an existing keyword or add a new one associated with the input image. *Id.* at 12:5-10.

The '807 patent therefore recites a new, improved computing system and related techniques to associate and store manipulable keyword metadata with digital image files. In particular, the novel structure of the image input and retrieval system provides a specific, technical solution to recognized shortcomings in prior computing systems that required users to provide their own keywords to associate with digital image data. The system improves on these prior computing systems through a particular arrangement of components that detect objects in images when they are first input to the system, retrieve and propose associated keywords from a database based on similarities with stored objects, and update and correct the keywords according to user input as more images containing the same objects are input to the system.

III. Claim Construction

The Petition does not assert that any claim term requires construction. Patent Owner does not believe that any claim terms require express construction to deny the Petition. Patent Owner does not waive, however, any argument regarding the proper scope of the Challenged Claim.

IV. Summary of the Asserted References

A. Stubler

Stubler describes a method for generating “semantic labels” (not objects) for an image based on similarities between metadata of the image and the metadata of previously stored images. EX1005 at ¶[0009]. Specifically, Stubler recites “a) acquiring an image . . .; b) automatically extracting metadata from the acquired image . . .; c) automatically selecting one or more stored images having metadata similar to the extracted metadata . . .; and d) generating one or more captions or labels for the acquired image from one or more preexisting captions or labels associate with the selected stored images. *Id.* According to Stubler, “[t]his invention uses image similarity based upon objectively measurable or determinable metadata to provide a mechanism for assigning captions or semantic labels to multiple images simultaneously, and to automatically assign these captions or labels to new images based upon shared metadata.” *Id.* at ¶[0022].

B. Wang

Wang describes a “person identifier and management system.” EX1006 at Title. The person identifier and management system includes an input/output system, an analysis system, and a profile database. *Id.* at 4:11-13. The input/output system includes a variety of input/output devices, including, for example, a display, a camera, a scanner, and a text input device. *Id.* at 5:13-26. The analysis

system includes a face detection and feature extraction system to detect whether an image contains a face and to detect the eye locations of the face to compute face feature data. *Id.* at 6:35-42. The profile database stores a number of face images and associated face-identifying or person-identifying data. *Id.* at 3:37-39. When the analysis system detects a face and extracts face feature data from an image, it then uses the face feature data to search the profile database for matching face feature data. *Id.* at 5:53-60. If a matching face is found, then the system retrieves the person-identifying information data associated with the matching face feature data. *Id.* at 5:60-64. If no matching face feature data is found, the system presents the user with the option to input the new face in the profile database along with person-identifying information. *Id.* at 6:1-7.

V. Legal Standard

A. Standard for obviousness

A claimed invention is obvious “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person of ordinary skill in the art.” 35 U.S.C. §103(a). As set out by the Supreme Court, the framework for an obviousness inquiry requires determining “the scope and content of the prior art,” the “differences between the prior art and the claims at issue,” and “the level of skill in the pertinent art.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398,

406 (2007) (citing *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966)). “[O]bviousness requires a suggestion of all limitations in a claim.” *CFMT, Inc. v. Yieldup Int’l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)). Further, obviousness determinations must be made without “any hint of hindsight.” *Star Sci., Inc. v. R.J. Reynolds Tobacco Co.*, 655 F.3d 1364, 1375 (Fed. Cir. 2011). The patent-in-suit may not be used “as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit.” *In re NTP, Inc.*, 654 F. 3d 1279, 1299 (Fed. Cir. 2011).

At the petition stage, it is Petitioner’s “burden to demonstrate both that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (internal citation and quotation omitted); *see also KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). Petitioners cannot satisfy their burden through “mere conclusory statements,” but “must instead articulate specific reasoning, based on evidence of record” that supports an obviousness determination. *In re Magnum Oil Tools*, 829 F.3d at 1380; *see also KSR*, 550 U.S. at 418 (“[T]here must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”).

Moreover, Petitioners cannot satisfy their burden with unsupported and conclusory expert testimony. *See* 37 C.F.R. § 42.65(a) (“[e]xpert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight”); *see also Initiative for Medicines, Access & Knowledge (I-MAK), Inc. v. Gilead Pharmasset LLC*, Case No. IPR2018-00390, Paper No. 7 at 14 (Jul. 19, 2018) (denying institution were expert testimony “merely repeats verbatim the conclusory statements set forth in the Petition, without providing any factual analysis or citing any supporting objective proof.”).

VI. The Petition Fails to Demonstrate a Reasonable Likelihood of Demonstrating that any Claim Is Unpatentable under Ground 1.

In Ground 1, the Petition asserts that Stubler renders claims 1-14 obvious. The Petition fails to demonstrate obviousness because Stubler does not disclose or render obvious multiple claim limitations of independent claims 1, 7, and 8.

A. Stubler fails to disclose “an image storing section for storing the image which is supposed to be classified and retrieved together with a keyword in a database and an object of the image being previously contained in the database.”

Claim 1 of the ’807 patent requires “an image storing section” that stores three pieces of information. EX1001 at Cl. 1. First, the image storage section stores “the image which is supposed to be classified and retrieved.” *Id.* Second, the image storing section stores “a keyword in a database.” *Id.* Third, the image storing section stores “an object of the image being previously contained in the database.”

Id. The Petition fails to demonstrate that Stubler discloses all three of these requirements. Specifically, the Petition fails to demonstrate that Stubler discloses storing “an object of the image being previously contained in the database.” The Petition does not explain how “metadata” may be construed as “an object of the image.”

1. Stubler discloses storing “metadata” about an image.

According to the Petition, Stubler’s disclosure of “one or more stored images having metadata similar to the extracted metadata” discloses storing “an object of the image being previously contained in the database” Pet. at 15.

Stubler states that metadata (*i.e.*, data about data) can be categorized into “three classes of information.” EX1005 at ¶[0029]. First, there is “capture metadata that is provided generally at the time of capture” such as time/date, global positioning (GPS) data, and event codes entered by a user at the time of capture. *Id.* Second, there is “global metadata that is objectively derived from the whole image” such as whole image measurements based on color histograms and texture features. *Id.* Third, there is regional metadata, which includes regional features such as face, skin, sky, grass, open space, and background vs. foreground. *Id.* at ¶[0030]. Stubler, however, makes clear it is using the term “image region” specifically to refer to “significant characteristic low-level feature[s], such as ‘sky’ or ‘grass’.” *Id.* at ¶[0022]. Moreover, Stubler explains that regional processing

yields “high-level feature *description*” and not the high-level features themselves (or a representation thereof). *Id.* (emphasis added). In other words, Stubler’s regional metadata is simply a textual *description* of a feature in a particular area of the acquired image. The regional metadata is *not* the object of the image, itself, as recited in the Challenged Claims.

This understanding (that the object itself is never actually stored) is consistent with the examples that Stubler provides (and that the Petition refers to) of regional metadata detection. For example, Stubler identifies Sung 1998 (EX1007) as providing an example of “face detection.” Sung explains that “face *detection* determines the location and size of each human face (if any) in an input image.” EX1007 at 1. Thus, face detection as described in Sung simply generates the location and size of an object (in this case, a face), but it is not the object itself. The Petition does not contend otherwise.

Similarly, Stubler points to Yang 1996 (EX1009) as an example of representing skin color in a chromatic space. Again, the resulting data generated in Yang is not the object itself, but a “chromatic color space” comprising normalized color information (*e.g.*, traditional R, G, and B values) in the absence of brightness data. EX1009 at 2. This data can then be used to locate a face in the original image by comparing the chromatic color space information for each pixel to a skin color model. *Id.* at 4. Further, Yang discusses a translation model over multiple images

in a video to track the motion of a face. *Id.* at 5. At no point is the detected face in Yang ever stored as its own object. Instead, the metadata is the *location* of the face in a series of images. *Id.* Thus, Yang simply generates color information that can be used to detect the location of a face, but does not disclose saving the object (*e.g.*, the face) itself. The Petition does not contend otherwise.

Stubler further points to U.S. Pat. App. No. 09/450,190 (“Luo”) (EX1008) as an example of detecting “semantic regions” such as the sky. Luo, like Sung and Yang, is concerned only with determining the *location* of objects. EX1008 at 3:58-60 (“It is an object of this invention to provide a method for detecting the location of main subjects within a digitally captured image”). Luo is silent as to saving the object (or “main subject” in the terminology of Luo) as recited in claim 1 of the ’807 patent. Thus, Luo also only discloses determining the location of a subject, and not saving the subject itself. The Petition does not contend otherwise.

Accordingly, Stubler discloses three different types of metadata that can be derived from an image: (i) capture metadata, (ii) global metadata, and (iii) regional metadata. Of these three types, the Petition asserts that the regional metadata corresponds to the claimed “object of an image” that is stored alongside the image itself and keywords in the image storing section of the image retrieving device. As explained below, however, “regional metadata” is not an “object of the image” as recited in claim 1 of the ’807 patent.

2. Stubler’s “regional metadata” is not an “object of the image.”

The Petition incorrectly equates Stubler’s regional metadata with the claimed “object of the image.” Regional metadata, however, is not an object of the image because regional metadata is merely a description of a region of an image, and not the actual object itself.

The ’807 patent makes clear that the claimed “object of the image” is not simply metadata, or a description of the object but is the object itself. First, claim 1 states that “the image . . . is stored together with . . . an object of the image being previously contained in the database.” EX1001, Cl. 1. The plain reading of this language is that the object itself is stored together with the image. The claim specifically recites the object itself and not a description of the object or metadata describing the location of the object. Claim 1 further recites “an object information inputting section for confirming by the user, adding, and correcting the keyword which is proposed by the keyword proposing section *when the inputted object acknowledged by the object acknowledging section is similar to the object of the image previously contained in the database.*” *Id.* (emphasis added). This limitation explicitly requires a comparison of the object acknowledged by the object acknowledging section and the object that is previously contained in the database (which is referred to in the “image storing section” element discussed

above). This comparison would not be possible if a mere description or location of the object were stored in the image storing section.

Dependent claim 2, which depends from claim 1 further supports the understanding that it is the object itself that is stored in the image storing section of claim 1, and not merely a description or location of an object. In claim 2, the object being stored is specifically a human face. Claim 2 recites, in relevant part, “a face similarity determining section for detecting a face image which is detected by the face image detecting section *so as to detect a similar face image stored in the database* according to the detected face imaged.” *Id.*, Cl. 2 (emphasis added). Thus, in claim 2, a “face image” (*e.g.*, an object) is “stored in the database.” *Id.* It is the face image itself, not a description or a location of a face image. This is consistent with the purpose of claim 2, as well. Specifically, the element is called a “face similarity detecting section.” The purpose of this element is, by its very name, to detect similarities between images of faces. This would not be possible based solely on a description or location of a face in an image, as Stubler’s regional metadata contains. Thus, claim 2 further supports the understanding that it is the object itself that is stored in the image storing section of claim 1, and not merely a description or location of an object.

The specification further supports the understanding that it is the object itself that is stored, and not merely a description or keyword. For example, Fig. 8 of the

'807 patent depicts an exemplary embodiment for detecting a human and adding key words. *Id.* at 10:1-3. With respect to step S4, the '807 states “[i]t is checked whether or not a *face image* which is similar to a *face image* which is pre-registered by the face image similarity determining section 114 exists in the database.” *Id.* at 10:19-22 (emphasis added). In this exemplary embodiment, the “face image which is pre-registered” corresponds to the claimed “object of the image being previously contained in the database.” Thus, the '807 patent specification makes clear that the objects are face “images” or representations of face “images” and not simply metadata, such as a description or a location of a face.

Based on this understanding, the “regional metadata” disclosed in Stubler does not disclose the claimed “object” that is stored in the database. In Stubler, the regional metadata consists of nothing more than a *location* or a *description* of an object, but it does not disclose the object itself being saved. *See, e.g.,* Stubler at ¶[0030]. Claim 1, on the other hand, requires that the object itself be saved. Accordingly, the Petition fails to demonstrate a reasonable likelihood that Stubler renders obvious the claimed “image storing section for storing the image which is supposed to be classified and retrieved together with a keyword in a database and an object of the image being previously contained in the database.”

B. Stubler fails to disclose “an object information inputting section for confirming by the user, adding, and correcting the keyword which is proposed by the keyword proposing section when the inputted object acknowledged by the object acknowledging section is similar to the object of the image previously contained in the database.”

As with the “image storing section” discussed above, the Petition fails to disclose the claimed “object information inputting section” because Stubler does not disclose a way to determine that “the inputted object acknowledged by the object acknowledging section is similar to the object of the image previously contained in the database.” Specifically, Stubler describes only storing regional metadata, which is a description or location of an object, but not the object itself. Claim 1 recites that the object inputting section is for confirming, adding, or correcting a keyword “when the inputted object acknowledged by the object acknowledging section is similar to the object of the image previously contained in the database.” Thus, claim 1 determines whether the inputted object and the previously stored object are the same by comparing them. Under Stubler’s “regional metadata,” this is not possible because there is no previously stored object with which to compare an inputted object. That is because, as discussed extensively above, Stubler only stores regional metadata, and not the object itself. Accordingly, the Petition fails to demonstrate a reasonable likelihood that Stubler renders obvious the claimed “object information inputting section for confirming

by the user, adding, and correcting the keyword which is proposed by the keyword proposing section when the inputted object acknowledged by the object acknowledging section is similar to the object of the image previously contained in the database.”

C. The Petition fails to demonstrate a reasonable likelihood that independent claims 7 and 8 are unpatentable.

The Petition also fails to demonstrate a reasonable likelihood that independent claims 7 and 8 are unpatentable for the same reasons as claim 1. Claims 7 and 8 contain similar limitations to those discussed above with respect to claim 1. Specifically, claim 7 recites “storing the image which is supposed to be classified and retrieved together with the keyword in a database and *an object of the image being previously contained in the database.*” EX1001, Cl. 7 (emphasis added). Similarly, claim 8 recites “storing the image which is supposed to be classified and retrieved together with a keyword in a database and *an object of the image being previously contained in the database.*” *Id.*, Cl. 8 (emphasis added). Because claims 7 and 8 contain similar limitations as claim 1, the Petition fails to demonstrate a reasonable likelihood that claims 7 and 8 are unpatentable for the same reasons that the Petition fails with respect to claim 1.

D. The Petition fails to demonstrate a reasonable likelihood that dependent claims 2-6 and 9-14 are unpatentable.

Dependent claims 2-6 each depend from claim 1 and dependent claims 9-14

each depend from claim 8. Therefore, claims 2-6 include all of the limitations of claim 1 and claims 9-14 include all of the limitations of claim 8. Accordingly, the Petition fails to demonstrate a reasonable likelihood that claims 2-6 and 9-14 are unpatentable for the same reasons as claims 1 and 8.

VII. The Petition Fails To Demonstrate A Reasonable Likelihood Of Demonstrating that Any Claim is Unpatentable Under Ground 2.

In Ground 2, the Petition asserts that Stubler in view of Wang renders dependent claims 2-6 and 9-14 obvious. As discussed above, dependent claims 2-6 each depend from claim 1 and dependent claims 9-14 each depend from claim 8. Therefore, claims 2-6 include all of the limitations of claim 1 and claims 9-14 include all of the limitations of claim 8. Because the Petition does not challenge independent claims 1 and 8 under Ground 2, the Petition fails to demonstrate a reasonable likelihood that claims 2-6 and 9-14 are unpatentable for the same reasons as claims 1 and 8.

VIII. Conclusion

Based on the deficiencies identified above, Petitioner has not demonstrated a reasonable likelihood of prevailing on any of its proposed grounds against any Challenged Claim. Thus, Patent Owner respectfully submits that the Board should decline to institute an IPR proceeding based on the Petition.

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Respectfully submitted,

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**CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME
LIMITATION**

I hereby certify that the above Patent Owner's Response consists of 4,474 words in 14 point Times New Roman font as calculated by the word count feature Microsoft Office 2016, in compliance with 37 C.F.R. § 42.24(a)(i) and (b)(1). This word count is inclusive of all text and footnotes but not including a table of contents, a table of authorities, mandatory notices under § 42.8, a certificate of service or word count, or appendix of exhibits or claim listing.

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e)(4), the undersigned certifies that on October 10, 2024, a copy of PATENT OWNER'S PRELIMINARY RESPONSE was served in its entirety by electronic mail on Petitioner's counsel at the following addresses indicated in Petitioner's Mandatory Notices:

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