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EXAMINER
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TARKO, ASMAMAW G

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* WENYI ZHAO, SIMON P. DIMAIO, and DAVID D. SCOTT

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Appeal 2015-002446  
Application 12/946,634<sup>1</sup>  
Technology Center 2400

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Before JOSEPH P. LENTIVECH, KARA L. SZPONDOWSKI, and  
SHARON FENICK, *Administrative Patent Judges*.

FENICK, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants seek our review under 35 U.S.C. § 134(a) of the Examiner's final rejection of claims 1–29, all the pending claims in the present application. We have jurisdiction over the appeal under 35 U.S.C. § 6(b)(1).

We REVERSE.

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<sup>1</sup> According to Appellants, the real party in interest is Intuitive Surgical Operations. (Appeal Br. 3.)

*Invention*

Appellants' invention relates to the sharpening of an image by decomposing the image into a plurality of components. (Spec. Abstract, 9.) The components are transformed to obtain unsharpened multi-resolution representations of the components. (*Id.*) Each multi-resolution representation comprises a plurality of transformation level representations, one of which is sharpness information. (*Id.* at 9.) Sharpness information from the transformed representation of a first component is transported to a same transformation level representation of the multi-resolution representation of a second component, and modifies the sharpness information in that transformation level, after which the components, including the second component, are transformed back to obtain a sharpened image. (*Id.* at 9, Abstract.)

*Illustrative Claim*

Claim 1, reproduced below with emphasis added, is illustrative:

1. An image sharpening method comprising:

capturing an image;

decomposing, by an image system, the image into a plurality of image-representation components;

transforming, by the image system, each image-representation component to obtain an unsharpened multi-resolution representation for each image-representation component, wherein a multi-resolution representation comprises a plurality of transformation level representations;

transporting, by the image system, sharpness information from an unsharpened transformation level representation of a first one of the image-representation components to a same transformation level representation of an unsharpened multi-resolution representation of a second

one of the image-representation components to create a sharpened multi-resolution representation of the second one of the image-representation components, wherein the transported sharpness information modifies sharpness information in the same transformation level representation of the unsharpened multi-resolution representation of the second one of the image-representation components;

transforming, by the image system, the sharpened multi-resolution representation of the second one of the image-representation components to obtain a sharpened image; and

displaying the sharpened image on a display device.

### *Rejections*

Appellants appeal the following rejections:

Claims 1, 8, 9, 12–14, 16, 17, 24, and 29 are rejected under 35 U.S.C. § 103(a) as unpatentable over Segall et al. (US 2010/0183071 A1; July 22, 2010) (“Segall”) and Pace et al. (US 2010/0129003 A1; May 27, 2010) (“Pace”). (Final Action 3–5.)

Claims 2, 3, 5–7, 10, 11, 15, 18–23, and 25–28 are rejected under 35 U.S.C. § 103(a) as unpatentable over Segall, Pace, and Marchitto et al. (US 2005/0143662 A1; June 30, 2005) (“Marchitto”). (Final Action 5–10.)

Claim 4 is rejected under 35 U.S.C. § 103(a) as unpatentable over Segall, Pace, and Benezra et al. (US 2009/0096895 A1; Apr. 16, 2009) (“Benezra”). (Final Action 10.)

### ANALYSIS

The Examiner finds that Segall teaches the limitations of claim 1, with the exception of the sharpness information, transported from a transformation level representation of a first component modifying

sharpness information in the same transformation level representation of the representation of the second component, which the Examiner finds to be taught in Pace. (Final Action 3; Answer 3–4.)

Segall is directed towards video coding and decoding, including coding and decoding of video sequences composed of frames captured at different exposure configurations. (Segall, Abstract.) The Examiner cites to several portions of the Segall disclosure as teaching the claimed steps of capturing an image and decomposing the image into a plurality of image representation components. (Final Action 3 (citing Segall ¶¶ 1, 5, 20, 23, 31, 53, 75, 137, 139, 146, and 153 and Fig. 4); Answer 3 (citing the same portions of Segall).)

Appellants argue that Segall describes a process that utilizes a sequence of images, and not a single image. (Appeal Br. 9–10, 12–14; Reply Br. 2–5.) Specifically, Appellants argue “Segall does not suggest generating pyramids for *different image-representation components of a single image*, but rather generating pyramids of *the same image-representation component of different images*.” (Appeal Br. 10, emphasis added.)

The Examiner responds, with respect to this argument, that:

It is understood that video images are multiple images, just like Segall. Furthermore, the claim requires an image, which is met by video in that it has an image, or multiple images. The examiner is under the opinion that patentability should not rest on how many images are processed, since this appears to be within the level of one of ordinary skill, in that if you can do processing on many image[s] you can do processing on one image.

(Answer 10–11.) With respect to an argument regarding dependent claims, the Examiner quotes Segall as applying to still images, when additional

enhancement images are captured at the same time as the default image.  
(Answer 11, citing Segall ¶ 20.)

We agree with the Appellants that the Examiner has not shown how Segall's teaching regarding the processing of multiple images renders obvious the claim limitations which deal with the decomposition of a single image. In this case, the cited portions of Segall teach or suggest multi-image processing using components of multiple video frames, not components of a single image. The Examiner does not adequately show how this multi-image process would make the claimed process, which decomposes a single image, obvious to one of ordinary skill in the art.

Therefore, we find Appellants' arguments to be persuasive. Because we agree with at least one of the arguments advanced by Appellants, we need not reach the merits of Appellants' other arguments.

Accordingly, we do not sustain the Examiner's obviousness rejection of independent claim 1. Additionally, we do not sustain the rejections of dependent claims 2–29, all argued in whole or in part on the same basis.

#### DECISION

We reverse the Examiner's § 103(a) rejections of claims 1–29 as obvious.

REVERSED