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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* ALEKSANDRA POPOVIC, HAYTHAM ELHAWARY, and MICHAEL CHUN-CHIEH LEE

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Appeal 2019-002684
Application 14/889,897
Technology Center 3700

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Before BRETT C. MARTIN, LISA M. GUIJT, and ARTHUR M. PESLAK, *Administrative Patent Judges*.

GUIJT, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant[1] seeks our review under 35 U.S.C. § 134(a) of the rejection of claims 1–15. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

[1] We use the word "Appellant" to refer to "Applicant" as defined in 37 C.F.R. § 1.42. Appellant identifies Konlinklijke Philips N.V. as the real party in interest. Appeal Br. 3.

## THE INVENTION

Appellant's invention relates to robotic control of an endoscope. Spec. 1:3–4. Claims 1 and 9 are the independent claims on appeal. Claim 1, reproduced below, is illustrative of the subject matter on appeal.

1. A robotic control system, comprising:

a robot unit including

an endoscope operable to generate an endoscope image, and

a robot operable to move the endoscope within an anatomical region; and

an endoscope controller configured to determine an endoscope pose within the anatomical region for an intra-operative visualization of an anatomical feature within the endoscope image;

wherein the endoscope pose is derived by the endoscope controller from an intra-operative selection of a pre-operative description of the anatomical feature for visualization of the anatomical feature of the endoscope image, the pre-operative description of the anatomical feature corresponding to a pre-operative delineation of a volume coordinate position of the anatomical feature within a pre-operative image of the anatomical region, and

a robot controller configured to command the robot to move the endoscope to the endoscope pose within the anatomical region to visualize the anatomical feature within the endoscope image.

## THE REJECTIONS

The Examiner relies upon the following as evidence in support of the rejections:

| NAME | REFERENCE | DATE |
|---|---|---|
| Prisco | US 2010/0249507 A1 | Sept. 30, 2010 |
| Miyamoto | US 2012/0053408 A1 | Mar. 1, 2012 |
| Popovic | WO 2012/035492 A1 | Mar. 22, 2012 |

The following rejections are before us for review:

I. Claims 1–7 and 9–14 stand rejected under 35 U.S.C. § 103 as unpatentable over Popovic and Prisco.

II. Claims 8 and 15 stand rejected under 35 U.S.C. § 103 as being unpatentable over Popovic, Prisco, and Miyamoto.

OPINION

*Rejection I*

Regarding independent claim 1, the Examiner finds that Popovic teaches, *inter alia*, *an endoscope controller 22 configured to determine an endoscope pose within an anatomical region* for an intra-operative visualization of an anatomical feature within the endoscope image, and *a robot controller 21 configured to command the robot to move the endoscope to the endoscope pose within the anatomical region* to visualize the anatomical feature within the endoscope image, as claimed. Final Act. 2–3 (citing, *e.g.*, Popovic 7:10–22, Fig. 2) (emphasis added). The Examiner also finds that Popovic discloses deriving an endoscope pose *at least partially* from a pre-operative delineation of a volume coordinate position of the anatomical feature within a pre-operative image of the anatomical region, for example, as a step in Popovic's "Intra-Operative Overlay Guidance" procedure. *Id.* at 3 (citing, *e.g.*, Popovic, Fig. 1, step S31, titled "Blood vessel tree image extraction"); Adv. Act. 2 (referring to Popovic's procedure as "Intra-Operative Overlay Guidance"). In particular, the Examiner finds that "[a] volume coordinate position," as claimed, "refers to the 3D (X,Y,Z) coordinate location," and thus, "[*a*] *pre-operative delineation of a volume coordinate position of the anatomical feature* is therefore the activity of

accurately setting forth the (X,Y,Z) coordinate location of an anatomical structure on the 3D pre-operative image." Ans. 5. The Examiner also finds that Popovic discloses that

> [a]t S34, [(titled, "Endoscopic path generation" in Figure 2),] an operator can select a point on the hybrid image that is part of the pre-operative 3D blood vessel tree and the robot will move the endoscope towards that location using the endoscope's current (X,Y,Z) location with respect to the 3D blood vessel tree and the desired (X,Y,Z) location of the new position selected by the operator.

Ans. 8.

The Examiner relies on Prisco for teaching an endoscope controller 200 also configured to determine an endoscope pose within an anatomical region for an intra-operative visualization of the anatomical feature, "*wherein the endoscope pose is derived by the endoscope controller from an intra-operative selection . . . of a pre-operative description . . . of the anatomical feature . . . corresponding to a pre-operative delineation of a volume coordinate position of the anatomical feature . . . within a pre-operative image of the anatomical region*," as claimed. Final Act. 3 (citing Prisco ¶¶ 36, 37, 51, 57, 59, 60, 61) (emphasis added).

The Examiner reasons that it would have been obvious to modify Popovic's endoscope controller 22 to use "landmark names," as taught by Prisco, "to provide *an additional* navigation tool." Final Act. 3 (citing Prisco ¶ 51) (emphasis added). The Examiner explains that because Prisco teaches that the use of landmarks is *complementary* to other endoscope navigation tools, Popovic's Intra-Operative Overlay Guidance is not obviated or negated by Prisco's endoscopic navigation process, but rather, Prisco's process "enhances the navigation means taught by Popovic," nor

would incorporating Prisco's process "prevent Popovic from working as intended." Adv. Act. 2.

Appellant argues, alternatively, that neither Popovic nor Prisco "describe, teach or suggest," individually,

> an endoscope pose being derived from an intra-operative selection by the surgeon of a pre-operative description of the blood vessel tree corresponding to a pre-operative delineation of a volume coordinate position of the blood vessel tree within a pre-operative image of an anatomical region including the blood vessel tree whereby an endoscope controller may generate an endoscopic path within the anatomical region for the robot controller to command the robot to move the endoscope along the path within the endoscopic region.

Appeal Br. 12–13 ("Section 7.A.," titled "***Popovic***"), 14 ("Section 7.B., titled "***Prisco***").

Appellant's arguments are not persuasive. As set forth *supra*, the Examiner relies on Prisco, not Popovich, for disclosing derivation of an endoscope pose from an intra-operative selection of a pre-operative description of the anatomical feature corresponding to a pre-operative delineation of a volume coordinate position of the anatomical feature within a pre-operative image of the anatomical region, as italicized *supra*. And, as set forth *supra*, the Examiner relies on Popovic, not Prisco, for disclosing that robot controller 21 is configured to command the robot to move the endoscope to the endoscope pose. Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references. *In re Merck & Co*., 800 F.2d 1091, 1097 (Fed. Cir. 1986); *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). In other words, Appellant does not identify Examiner error with respect to the Examiner's findings relative to Popovich or Prisco. Moreover,

statements that merely point out what a claim recites are not considered to present an argument for separate patentability of the claim. 37 C.F.R. § 41.37(c)(1)(iv)(2017); *see also In re Lovin*, 652 F.3d 1349, 1357 (Fed. Cir. 2011) (Rule 41.37 requires more than recitation of the claim elements and a naked assertion that the elements are not found in the prior art).

Appellant also argues that

> while *Prisco* does teach the establishment of landmarks, such landmarks are used to generate vectors that point to the landmarks within a displayed image. The landmarks are not used to derive an endoscopic pose whereby an endoscope controller may generate an endoscope path within the anatomical region for the probe controller to command the robot to move the endoscope along the path within the endoscopic region.

Appeal Br. 14–15; *see also* Reply Br. 15 (arguing that "*Prisco* fails to describe, teach or suggest a controller (302) deriving an endoscope pose of endoscope (110), . . . because *Prisco* is exclusively directed to a visual guidance of an operator, not an endoscope controller"). Appellant concludes that "[t]hus, *Prisco* fails to describe, teach or suggest a modification of *Popovic* to incorporate the claimed derivation of the endoscopic pose, whereby an endoscope controller may generate an endoscopic path, as claimed. .Appeal Br. at 15; *see also* Reply Br. 11–20, *e.g.*, at 12–13 (arguing that Popovic's "graphical matching operating principal . . . wholly eliminates a necessity for a surgeon to delineate a volume coordinate position of the anatomic feature . . . as a basis for deriving the endoscope pose").

We are not persuaded by Appellant's argument. The Examiner does not rely on Prisco for suggesting use of the endoscope pose derived from landmarks to guide the endoscope *by the robot controller* (as opposed to use *by the surgeon*), but rather, as set forth *supra*, the Examiner relies on

*Popovic* for disclosing that robot controller 21 is configured to command the robot to move the endoscope to the endoscope pose. In other words, Appellant's argument does not apprise us of error in the Examiner's reasoning that Prisco expressly suggests using landmarks as an *additional* navigation tool, for example, such that Popovic's robot controller uses landmarks as taught in Prisco—in addition to Popovic's graphical matching operating principal—to guide the endoscope to an endoscope pose.

Finally, Appellant concludes that Popovic in view of Prisco "fails to render obvious" certain limitations of "claims 1 and 9 and dependent claims 2–7 and 10–14." Appeal Br. 15–16 ("Section 7.C.," titled "***Popovic* in view of *Prisco***"). This argument is without any support or evidence, and therefore, is insufficient to apprise us of error in the Examiner's findings or reasoning.

Accordingly, we sustain the Examiner's rejection of independent claim 1. Appellant chose not to present arguments for the patentability of claims 2–7 and 9–14 separate from the arguments presented for the patentability of claim 1 *supra*, and therefore, for essentially the same reasons as stated *supra*, we also sustain the Examiner's rejection of claims 2–7 and 9–14. Appeal Br. 11–22.

*Rejection II*

Appellant chose not to present arguments for the patentability of claims 8 and 15 separate from the arguments presented for the patentability of claim 1 *supra*, and therefore, for essentially the same reasons as stated *supra*, we also sustain the Examiner's rejection of claims 8 and 15. Appeal Br. 18–19.

## CONCLUSION

In summary:

| Claims Rejected | § | Reference(s) | Affirmed | Reversed |
|---|---|---|---|---|
| 1–7, 9–14 | 103 | Popovic, Prisco | 1–7, 9–14 | |
| 8, 15 | 103 | Popovic, Prisco, Miyamoto | 8, 15 | |
| **Overall Outcome** | | | 1–15 | |

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED