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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/015,335* .

PATENT UNDER REEXAMINATION *12070867* .

ART UNIT *3992* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Order Granting Request For Ex Parte Reexamination	Control No. 90/015,335	Patent Under Reexamination 12070867	
	Examiner MICHAEL R ROSWELL	Art Unit 3992	AIA (FITF) Status Yes

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

The request for *ex parte* reexamination filed 06/18/2025 has been considered and a determination has been made. An identification of the claims, the references relied upon, and the rationale supporting the determination are attached.

Attachments: a)☐ PTO-892, b)☐ PTO/SB/08, c)☑ Other: PTO-1449

1. ☑ The request for *ex parte* reexamination is GRANTED.

RESPONSE TIMES ARE SET AS FOLLOWS:

For Patent Owner's Statement (Optional): TWO MONTHS from the mailing date of this communication (37 CFR 1.530 (b)). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**

For Requester's Reply (optional): TWO MONTHS from the **date of service** of any timely filed Patent Owner's Statement (37 CFR 1.535). **NO EXTENSION OF THIS TIME PERIOD IS PERMITTED.** If Patent Owner does not file a timely statement under 37 CFR 1.530(b), then no reply by requester is permitted.

/MICHAEL ROSWELL/ Primary Examiner, Art Unit 3992		

cc:Requester (if third party requester)

DECISION ON REQUEST FOR EX PARTE REEXAMINATION

This Office Action is in response to a request for reexamination of claims 1-20 of US Patent 12,070,867 B2 to **Lonsberry** et al. ("the '867 Patent"), submitted by Third Party Requester (3PR) on 18 June 2025.

A substantial new question of patentability affecting claims 1-20 of US Patent 12,070,867 is raised by the request for *ex parte* reexamination.

The '867 Patent issued with claims 1-20, of which claims 1, 8, and 16 are independent.

Scope of Reexamination

Claims 1-20 **will be** reexamined as requested.

Priority

The patent requested for reexamination, US 12,070,867, derives from a string of related applications. The '867 Patent was filed as US Application 18/469,506 on 18 September 2023 as a continuation of US Applications 17/902,748 and 17/680,027. US Application 17/680,027 claimed priority to two provisional applications: US 63/282,827, filed 24 November 2021, and US 63/153,109, filed 24 February 2021.

As stated in the Request at 5:

> As indicated above, the claimed subject matter of the '867 patent requires collision avoidance, particularly relative to the fixtures.
>
> Provisional patent application No. 63/153,109 filed February 24, 2021 (the "first provisional") contains ***no*** mention of collisions, or of planning a path to avoid collisions. As such, the first provisional contains no mention of collision avoidance relative to fixtures. Accordingly, any claims directed to planning a robotic welding path to avoid collisions with fixtures (i.e., ***all*** claims of the '867 Patent) are ***not*** entitled to the benefit of the filing date of the first provisional.

The Examiner agrees. A review of provisional application US 63/153,109 failed to locate any support for subject matter relating to collision avoidance and welding path planning to avoid

collisions with fixtures. Independent claims 1, 8, and 16 recite such limitations[1]. As a result, independent claims 1, 8, and 16 are not entitled to the priority date of US Provisional Application 63/153,109. See MPEP 211.05(I) and 211.05(I)(A). Claims depending from independent claims 1, 8, and 16 (e.g., claims 2-7, 9-15, and 17-20, the remaining claims of the '827 Patent) are similarly not entitled to such priority date.

The Request at 5 provides a general discussion of the subject matter disclosed in US Provisional Application 63/282,827, noting "some discussion about path planning and collision avoidance", but does not directly challenge the entitlement of the '827 Patent to the priority date of US 63/282,827. Subsequently, and for the purposes of expedited prosecution, the Office will afford the '827 Patent claims the benefit of the filing date of US 63/282,827, 24 November 2021.

Information Disclosure Statement

Regarding Information Disclosure Statement (IDS) submissions, MPEP § 2256 recites: "Where patents, publications, and other such items of information are submitted by a party (Patent Owner or Requester) in compliance with the requirements of the rules, the requisite degree of consideration to be given to such information will normally be limited by the degree to which the party filing the information citation has explained the content and relevance of the document. The initials of the examiner placed adjacent to the citations on the form PTO/SB/08 or its equivalent, without an indication to the contrary in the record, do not signify that the document has been considered by the examiner any further than to the extent noted above."

Accordingly, the IDS submission filed by 3PR on 18 June 2025 has been considered by the Examiner only within the scope required by MPEP § 2256, unless otherwise noted.

[1] In particular, independent claim 1 recites "generate a welding path for a robot to follow when welding the seam, wherein the welding path is planned considering whether the welding tool or the robotic arm is predicted to collide with the one or more fixtures". Independent claims 8 and 16 recite analogous limitations.

Summary of Prosecution History

The patent requested for reexamination, US 12,070,867 to **Lonsberry** et al., issued from US Application 18/469,506 with a filing date of 18 September 2023. The following is a summary of the relevant portions of the corresponding prosecution history.

US Application 18/469,506

The '867 Patent was filed as US Application 18/469,506 ("the '506 Application") on 18 September 2023 as a continuation of US Applications 17/902,748 and 17/680,027. US Application 17/680,027 claimed priority to two provisional applications: US 63/282,827, filed 24 November 2021, and US 63/153,109, filed 24 February 2021. The '506 Application originally presented claims 1-26. A preliminary amendment filed 27 November 2023 cancelled claims 1-26 and presented new claims 27-46, including independent claims 27, 34, and 42.

The Office mailed a Notice of Allowability on 1 May 2024, allowing claims 27-46. The Notice of Allowability discussed prior art to **Miegel**, **Louban**, and **Chang**, stating that such references "taken alone or in combination with each other, are silent in disclosing all the limitations of claims 27, 34, and 42" (see 1 May 2024 Notice of Allowance at 7). The Notice of Allowance more particularly asserts that the combination of the cited prior art failed to disclose (1 May 2024 Notice of Allowance at 6):

> a robot controller configured to: based on image data associated with one or more images of the workspace and received from one or more sensors: identify the fixture in the workspace; and identify the seam in the workspace; and the welding path generated to provide a collision free path of the robot arm, the welding tool, both, with respect to the fixture.

The '506 Application was published as US Patent 12,070,867 on 27 August 2024 with claims 1-20.

Summary

Therefore, at least the following limitations of claims 1, 8, and 16 would be considered important to patentability:

(claim 1) *identify at least the one or more fixtures and the seam based on one or more images of the multiple images;*
generate a welding path for a robot to follow when welding the seam, wherein the welding path is planned considering whether the welding tool or the robotic arm is predicted to collide with the one or more fixtures

(claim 8) *based on image data associated with one or more images of the workspace and received from one or more sensors:*
identify the fixture in the workspace; and
identify the seam in the workspace;
generate, based on a position of the identified fixture in the workspace, a welding path for the robotic arm to follow to weld at least a portion of the identified seam, the welding path generated to provide a collision free path of the robot arm, the welding tool, both, with respect to the fixture

(claim 16) *based on the image data associated with one or more images of the workspace:*
identifying a fixture in the workspace…;
identifying the seam in the workspace;
generating, based on a position of the identified fixture in the workspace, a welding path for a robotic arm to follow to weld at least a portion of the identified seam…, and wherein the welding path is generated to provide a collision free path of the robot arm, the welding tool, both, with respect to the fixture

It is noted that the Request at 8 states "it appears that the basis for allowance of the '867 Patent was that fact that none of the references considered by the Examiner disclosed using a robot controller (item (i)) to identify seams and fixtures based on one or more images of the workspace (item (iii))."

Prior Art Cited in the Request

The instant Request at 2-3 indicates that the following four (4) prior art references present substantial new questions of patentability with respect to claims 1-20:

- **Zych** – "Programming of Welding Robots in Shipbuilding", (2021)

- **Larkin** – "3D Mapping using a ToF Camera for Self Programming an Industrial Robot", (2023)
- **Rout** – "Advances in weld seam tracking techniques for robotic welding: A review", (2018)
- **Hong** – "Online Extraction of Pose Information of 3D Zigzag-Line Welding Seams for Welding Seam Tracking", (2021)

As asserted by the Request at 2, none of the prior art in the Request were cited during prosecution of the '867 Patent or have been, per MPEP § 2242, "(A) decided in a final holding of invalidity by a federal court in a decision on the merits involving the claims, after all appeals; (B) decided in an earlier concluded examination or review of the patent by the Office; or (C) raised to or by the Office in a pending reexamination or supplemental examination of the patent".

The Examiner notes that the **Zych** and **Hong** references were publicly available as of at least 11 May 2021 and 7 January 2021, respectively, prior to the priority date of 24 November 2021 for the '867 Patent, as established *supra*.

With specific respect to **Zych**, the Examiner notes the declaration of Paul Craane filed in support of the Request. The Declaration at 1-3 asserts that **Zych** was made publicly available as of 3 May 2021, according to information accessed via the "Wayback Machine" (https://web.archive.org), an internet archive used to access archived versions of websites. The Examiner notes that the images provided by the declaration in support of the asserted publication date are largely illegible. However, the Examiner was able to confirm a publication date of 11 May 2021 for **Zych** by entering into the Wayback Machine "https://www.sciencedirect.com/science/article/pii/S2212827121004091", the URL of the webpage on the Science Direct site hosting "Programming of Welding Robots in Shipbuilding", found in Vol. 99 of Procedia CIRP. Notably, the archived site contains a selectable PDF link titled "Download full text in PDF". Thus, the Examiner contends that through a preponderance

of the evidence, **Zych** was publicly available in its entirety through the Science Direct website on at least 11 May 2021, a date similarly noted in the Declaration at 2.

Affidavits, Declarations, or Other Written Evidence

The Examiner recognizes the declaration of Paul Craane, referenced in support of Third Party Requester. The declaration has been considered and made of record. The Examiner further notes that affidavits or declarations or other written evidence which explain the contents or pertinent dates of prior art patents or printed publications in more detail may be considered in reexamination (MPEP § 2258(I)(E)), but any rejection must be based upon the prior art patents or printed publications as explained by the affidavits or declarations or other written evidence.

Substantial New Questions of Patentability

The presence or absence of a "substantial new question of patentability" determines whether or not reexamination is ordered. For a substantial new question of patentability to be present, it is only necessary that: (A) the prior art patents and/or printed publications raise a substantial question of patentability regarding at least one claims, i.e., the teaching of the (prior art) patents and printed publications is such that a reasonable examiner would consider the teaching to be important in deciding whether or not the claim is patentable; and (B) the same question of patentability as to the claim has not been decided by the Office in an earlier concluded examination or review of the patent, raised to or by the Office in a pending reexamination or supplemental examination of the patent, or decided in a final holding of invalidity (after all appeals) by a federal court in a decision on the merits involving the claim. If a reexamination proceeding was terminated/vacated without resolving the substantial question of patentability question, it can be re-presented in a new reexamination request. It is not necessary that a "prima facie" case of unpatentability exist as to the claim in order for a

substantial new question of patentability to be present. Thus, a substantial new question of patentability as to a patent claim could be present even if the examiner would not necessarily reject the claim as either fully anticipated by, or obvious in view of, the prior art patents of printed publications (see MPEP § 2242(I)).

In a decision to order reexamination made on or after 2 November 2002, reliance on old art does not necessarily preclude the existence of a substantial new question of patentability that is based exclusively on that old art. See Public Law 107-273, 116 Stat. 1758, 1899-1906 (2002), which expanded the scope of what qualifies for a substantial new question of patentability upon which a reexamination may be based. Determinations on whether a substantial new question of patentability exists in such an instance shall be based upon a fact-specific inquiry done on a case-by-case basis. For example, a substantial new question of patentability may be based solely on old art where the old art is being presented/viewed in a new light, or in a different way, as compared with its use in the earlier examination(s), in view of a material new argument or interpretation presented in the request. Such material new argument or interpretation may be based solely on claim scope of the patent being reexamined (see: MPEP 2242(II)(A)).

The instant request includes three (3) proposed grounds of rejection, reproduced herein (see Request at 12):

(1) Claims 1-20 are unpatentable under 35 U.S.C. 102(a) as being anticipated by Zych.

(2) Claims 1-20 are unpatentable under 35 U.S.C. 103 as being obvious over Hong in view of Zych, and further in view of Larkin.

(3) Claims 1-20 are unpatentable under 35 U.S.C. 103 as being obvious over Rout in view of Zych, and further in view of Larkin.

Claims 1, 8, and 16 are independent claims. Claims 2-7, 9-15, and 17-20 are dependent claims depending variously from claims 1, 8, and 16.

SNQ 1: Claims 1-20 in view of Zych

The Request proposes rejections of claims 1-20 over **Zych**, at 13-32.

Independent claim 1 will be used as a reference claim for the following discussion. As identified above, the limitations of the independent claims that are critical to the patentability of the '867 Patent are as follows:

> (claim 1) *identify at least the one or more fixtures and the seam based on one or more images of the multiple images;*
> *generate a welding path for a robot to follow when welding the seam, wherein the welding path is planned considering whether the welding tool or the robotic arm is predicted to collide with the one or more fixtures*

Zych

The **Zych** reference generally discloses "methods for automating programming of controllers of welding robots" (see Request at 9).

Regarding the limitation(s) "*identify at least the one or more fixtures and the seam based on one or more images of the multiple images;* [and]

generate a welding path for a robot to follow when welding the seam, wherein the welding path is planned considering whether the welding tool or the robotic arm is predicted to collide with the one or more fixtures", the Request maps the teachings of **Zych** to said limitations at 15-16. **Zych** discloses "automatic processing of acquired 3D data" suitable to identify the "shape and location of individual parts", at p. 481, § 3.3. **Zych** further states that "[a]fter identification of component geometry and seams, an initial sequence of weld seams is determined based on predefined rules", *id.* **Zych** further discloses at p. 480, § 3 that welding task space in shipbuilding includes "finding appropriate torch poses without collision (torch angles optimized with regard to requirements of welding process). This can be done within the

process planning step." **Zych** at p.482, § 3.3 states "[t]he major challenge to this approach was to deal with the significantly more complex component structures with regard to 3D data acquisition, data processing, and trajectory planning since the robot will have to work in confined spaces with a high risk of collision. Therefore, adaptive scanning strategies have been developed as well as iterative segmentation procedures."

As such, it is agreed that **Zych** raises an SNQ with respect to the relevant limitations of independent claims 1, 8, and 16 of the '867 Patent. There is substantial likelihood that a reasonable examiner would consider these teachings important in deciding whether or not the claims are patentable. Inasmuch as claims 2-7, 9-15, and 17-20 depend from independent claims 1, 8, and 16, the disclosure of **Zych** is also found raise an SNQ with respect to such dependent claims.

The **Zych** reference was not of record in the prior original examination and thus was not previously discussed by the examiner nor applied to any of the claims in the prior original examination.

Accordingly, **Zych** raises a substantial new question of claims 1-20. Such question has not been decided in a previous examination of the '867 Patent, nor was there a final holding of invalidity by the Federal courts regarding the '867 Patent.

SNQ 2: Claims 1-20 in view of Hong, Zych, and Larkin

The Request proposes a rejection of claims 1-20 over **Hong**, **Zych**, and **Larkin** (see Request at 32-52).

Independent claim 1 will be used as a reference claim for the following discussion. As identified above, the limitations of the independent claims that are critical to the patentability of the '867 Patent are as follows:

> (claim 1) *identify at least the one or more fixtures and the seam based on one or more images of the multiple images;*

generate a welding path for a robot to follow when welding the seam, wherein the welding path is planned considering whether the welding tool or the robotic arm is predicted to collide with the one or more fixtures

Hong, Zych, and Larkin

The relevancy of the **Zych** reference as it relates to the claims of the '867 Patent has been discussed above.

Regarding the limitation(s) "*identify at least the one or more fixtures and the seam based on one or more images of the multiple images;* [and]
generate a welding path for a robot to follow when welding the seam, wherein the welding path is planned considering whether the welding tool or the robotic arm is predicted to collide with the one or more fixtures", the Request further maps the teachings of **Hong** and **Larkin** to said limitations at 33-35.

Hong generally discloses "methods for extracting pose information for 3D zigzag-welding seams suitable for real-time tracking of welding seams" (Request at 11). **Hong** further discloses "a method for the fast acquisition of the point cloud data for 3D zigzag-line welding seams", at p. 3; weld path generation through an "auto path generation algorithm", at p. 2; and the changing of an attitude of a welding seam "due to the influence of complex welding conditions such as welding workpiece clamping, assembly, and deformation", at p. 8.

Larkin generally discloses the "CAD-based programming of welding robots" (Request at 10). **Larkin** further discloses a motion planner suitable to generate "a collision free path [of a welding robot] from one location to another", at p. 496.

As such, it is agreed that **Hong**, **Zych**, and **Larkin** raise an SNQ with respect to claims 1, 8, and 16 of the '867 Patent. There is substantial likelihood that a reasonable examiner would consider these teachings important in deciding whether or not the claims are patentable. Inasmuch as claims 2-7, 9-15, and 17-20 depend from independent claims 1, 8, and 16, the

disclosures of **Hong**, **Zych**, and **Larkin** are also found raise an SNQ with respect to such dependent claims.

The **Hong**, **Zych**, and **Larkin** references were not of record in the prior original examination and thus were not previously discussed by the examiner nor applied to any of the claims in the prior original examination.

Accordingly, **Hong**, **Zych**, and **Larkin** raise a substantial new question of claims 1-20. Such question has not been decided in a previous examination of the '867 Patent, nor was there a final holding of invalidity by the Federal courts regarding the '867 Patent.

SNQ 3: Claims 1-20 in view of Rout, Zych, and Larkin

The Request proposes a rejection of claims 1-20 over **Rout**, **Zych**, and **Larkin** (see Request at 52-73).

Independent claim 1 will be used as a reference claim for the following discussion. As identified above, the limitations of the independent claims that are critical to the patentability of the '867 Patent are as follows:

> (claim 1) *identify at least the one or more fixtures and the seam based on one or more images of the multiple images;*
> *generate a welding path for a robot to follow when welding the seam, wherein the welding path is planned considering whether the welding tool or the robotic arm is predicted to collide with the one or more fixtures*

Rout, Zych, and Larkin

The relevancy of the **Zych** and **Larkin** references as they relate to the claims of the '867 Patent has been discussed above.

Rout generally discloses "various techniques for identifying and tracking seams in robotic welding" (Request at 11). Furthermore, **Rout** discloses that "features of [the] weld seam extracted by the image processing technique are then used by the controller module of [the] seam tracking system to guide the robot along the weld seam path" (see p. 29, § 2.3.4).

As such, it is agreed that **Rout**, **Zych**, and **Larkin** raise an SNQ with respect to claims 1, 8, and 16 of the '867 Patent. There is substantial likelihood that a reasonable examiner would consider these teachings important in deciding whether or not the claims are patentable. Inasmuch as claims 2-7, 9-15, and 17-20 depend from independent claims 1, 8, and 16, the disclosures of **Rout**, **Zych**, and **Larkin** are also found raise an SNQ with respect to such dependent claims.

The **Rout**, **Zych**, and **Larkin** references were not of record in the prior original examination and thus were not previously discussed by the examiner nor applied to any of the claims in the prior original examination.

Accordingly, **Rout**, **Zych**, and **Larkin** raise a substantial new question of claims 1-20. Such question has not been decided in a previous examination of the '867 Patent, nor was there a final holding of invalidity by the Federal courts regarding the '867 Patent.

USC 325(d)

A review of the post grant history for the instant patent indicates that there have been no other Office post grant challenges made to the patent (Reexamination Proceedings or *Inter Partes* Review, Post Grant Review, Covered Business Method trials). Accordingly, a discretionary denial of reexamination pursuant to 35 USC 325(d) is not applicable.

Conclusion

Claims 1-20 **will be** reexamined as requested.

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 USC 305 requires that reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 CFR 1.550(c).

The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a) to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving US Patent 12,070,867 throughout the course of this reexamination proceeding. The third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282, and 2286.

All correspondence relating to this *ex parte* reexamination proceeding should be directed:

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for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning this communication should be directed to MICHAEL ROSWELL, at (571) 272-4055. General inquiries should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

/MICHAEL ROSWELL/
Primary Examiner, Art Unit 3992

Conferees:

/ADAM L BASEHOAR/
Primary Examiner, Art Unit 3992

/MICHAEL FUELLING/
Supervisory Patent Examiner, Art Unit 3992