UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NICHOLSON MANUFACTURING LTD.,

Petitioner,

v.

BID GROUP TECHNOLOGIES LTD.,

Patent Owner.

Case No. PGR2025-00081

Patent No. 12,163,947

PATENT OWNER'S RESPONSE TO PETITION

TABLE OF CONTENTS

Page

I. Introduction.....5

II. Level of Skill in the Art.....6

A. Dr. Pazzani's declaration should be disregarded. 7

III. Gagnon is Duplicative of Prosecution.....8

IV. Petitioner Has Failed to Establish Obviousness. 9

A. Grounds 1 to 3: Petitioner relies upon aspirational statements alone. 9

B. Grounds 1 and 3: A POSITA would not be motivated to combine Gagnon with Kambla or Petruzella. 11

C. Ground 2: A POSITA would not be motivated to combine Gagnon with Ido. 12

D. Grounds 1-3: No combination of Gagnon, Kambla, Ido, and/or Petruzella teaches predictive controls. 14

E. Ground 2: Gagnon in light of Ido, Petruzella, and/or Kambla does not teach the identification of moisture content or knots. 15

V. Petitioner Fails to Establish that the Claim 1 and its Dependent Claims are Patent-Ineligible Under § 101 15

A. At *Alice* Step One, Claim 1 Is Not Directed to an Abstract Idea.....16

B. Even If Claim 1 Recites an Abstract Idea, It Includes Significantly More Under *Alice* Step Two.....20

C. Dependent Claims 2–10 22

VI. Independent Claim 11 and its Dependent Claims are Patent-Eligible Under § 101 25

A. At *Alice* Step One, Claim 11 Is Not Directed to an Abstract Idea.....25

TABLE OF CONTENTS

Page

B. Even If Claim 11 is Found to Recite an Abstract Idea, It Includes Significantly More Under *Alice* Step Two 29

C. Dependent Claims 12–18 31

VII. Claims 7 and 8 are Not Indefinite 33

VIII. Conclusion 35

TABLE OF AUTHORITIES

Page

Cases

Alice Corp. Pty. v. CLS Bank Int'l,
573 U.S. 208 (2014).....*passim*

Bristol–Myers Squibb v. Ben Venue Laboratories, Inc.,
246 F.3d 1368, 58 USPQ2d 1508 (Fed.Cir.2001).....10

Dist., Inc. et al. v. INO Therapeutics LLC,
IPR2016-00781, Paper 10 (USPTO Aug. 25, 2016) 9

Dorco Co., Ltd. v. The Gillette Co., LLC,
IPR2017-00500, Paper 7 (USPTO June 21, 2017).....8, 9

Elan Pharms., Inc. v. Mayo Found. for Med. Educ. & Rsch.,
346 F.3d 1051 (Fed. Cir. 2003) 9

Fujifilm Corporation v. Sony Corporation,
2017 WL 6271629 (Patent Tr. & App. Bd.).....12

Kahn v. Gen. Motors Corp.,
135 F.3d 1472 (Fed. Cir. 1998) 15

Kyocera Senco Indus. Tools Inc. v. Int'l Trade Comm'n,
22 F.4th 1369 (Fed. Cir. 2022) 8

Liberty Ammunition, Inc. v. United States,
835 F.3d 1388 (Fed. Cir. 2016) 34

Polaris PowerLED Tech., LLC v. VIZIO, Inc., 2019 WL 13043592,
(C.D. Cal. Nov. 26, 2019), *order clarified*, 2020 WL 1060363
(C.D. Cal. Jan. 21, 2020) 34

Redline Detection, LLC v. Star Envirotech, Inc.,
811 F.3d 435 (Fed. Cir. 2015) 12

*Samsung Electronics Co., Ltd. v. Parthenon Unified Memory
Architecture LLC*, 2016 WL 1613870 (Patent Tr. & App. Bd.).....12

TABLE OF AUTHORITIES

Page

Sundance, Inc. v. DeMonte Fabricating Ltd.,
550 F.3d 1356 (Fed. Cir. 2008) 7

Sunoco Partners Mktg. & Terminals L.P. v. Powder Springs Logistics, LLC, 624 F. Supp. 3d 473 (D. Del. 2022), *aff'd in part, rev'd in part,* No. 2023-1218, 2026 WL 122544 (Fed. Cir. Jan. 16, 2026).....14

Unified Patents,
IPR2016-01571, Paper 10.....8

Statutes

35 U.S.C. § 101 15

Other Authorities

U.S. Patent No. 12,163,947.....*passim*

I. INTRODUCTION

Nicholson Manufacturing Ltd. ("Nicholson") has not carried its burden of demonstrating by a preponderance of the evidence that the claims of U.S. Patent No. 12,163,947 (the "'947 Patent") are unpatentable. Primarily, Nicholson uses the lay testimony of an alleged expert who has no experience in the art to propose theories that were already considered by the Examiner during prosecution. Nicholson attempts 'new' combinations of references that are either irrelevant or redundant.

Bid Group Technologies Ltd. ("Patent Owner") has invented a groundbreaking system in debarking, allowing predictive control of debarking parameters on a log-by-log basis to achieve maximum debarking efficiency and quality through the contactless scanning of undebarked logs. Nicholson's alleged obviousness combinations all rely on retrospective controls which use output data to control the parameters for the next input. The invention of the '947 Patent explicitly teaches away from retrospective controls and towards predictive controls which use characteristics of the *input* to control debarking parameters.

Nicholson next attempts to oversimplify the invention to an abstract idea while simultaneously alleging that the predetermined value for accuracy tolerance is so complicated and convoluted it is indefinite. A POSITA would understand the predetermined value for classification accuracy which would be acceptable in the industry. The method and system are not directed to an abstract idea; rather, the '947

Patent is directed to the inventive concept of a debarker which uses contactless sensors to detect characteristics of an undebarked log and adapt debarking parameters to achieve minimal remaining bark and fiber loss.

II. LEVEL OF SKILL IN THE ART

A person of skill in the art (POSITA) would necessarily have experience in wood processing or logging, as the invention primarily relates to the application of generic computer science principles to complex debarking operation parameters. As such, a POSITA would have either: (a) a bachelor's in engineering *and* at least four years in wood processing; (b) a bachelor's degree in Forest or Wood Products Science *and* at least two years of experience in wood processing or logging; or (c) eight years of experience in the field of wood processing or logging. *See* Ex. 2037 at ¶ 45. While a forestry program now requires courses on the application of computer science to forestry, computer science students are not required to take courses in forestry. *Id.* at ¶ 46. Thus, the average forestry graduate would qualify as a POSITA, but the average computer scientist would lack the skills to apply the invention described within the '947 Patent. Even Dr. Pazzani agrees that a POSITA "would have to be part of a team in which there … was people with debarking experience." Ex. 2001 at 60:9-17.

A. Dr. Pazzani's declaration should be disregarded.

"Admitting testimony from a person such as [Dr. Pazzani] with no skill in the pertinent art, serves only to cause mischief and confuse the factfinder." *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1362 (Fed. Cir. 2008). While the '947 Patent discusses the use of a deep-learning algorithm to select parameters and conduct image recognition, it does not claim deep-learning algorithms as the invention. Rather, the invention goes to the use of these algorithms in controlling highly complex debarking machines which must be carefully calibrated based upon the debarking characteristics of logs.

While Dr. Pazzani has experience in computer science, by his own admission, the computer science aspects of this invention could be implemented by any computer science student. Ex. 2001 at 63:6-14. Dr. Pazzani lacks any experience whatsoever in forestry and wood sciences. *Id.* at 18:19-21. Dr. Pazzani rotates between acknowledging he would need the assistance of a logging professional, *id.* at 60:9-17, and blind hubris. *Id.* at 90:3-5 ("a person with artificial intelligence can gain the basic knowledge of debarking necessary for this easily.").

While Nicholson may "refer[] to [Dr. Pazzani] as a technical expert, he has no technical experience in the field of [forestry] and practiced" as a computer scientist in unrelated fields such as ornithology and medicine. *Sundance*, 550 F.3d at 1361; Ex. [Pz Dep] at 91:7-10 ("I work in the medical field"), 116:24 ("In my own work

on bird species identification…"). Due to the deep knowledge of forestry required to understand the complex relationship between log characteristic identification and debarking parameters, lack of the relevant forestry and wood products skill is lethal. "Without that [forestry] skill, the witness' opinions are neither relevant nor reliable." *Kyocera Senco Indus. Tools Inc. v. Int'l Trade Comm'n*, 22 F.4th 1369, 1377 (Fed. Cir. 2022). Therefore, the opinions of Dr. Pazzani should be struck or disregarded.

III. GAGNON IS DUPLICATIVE OF PROSECUTION

When "Petitioner's Grounds . . . present essentially the same question of patentability as was previously considered by the Examiner . . . ." review is typically discouraged as inefficient. *Dorco Co., Ltd. v. The Gillette Co., LLC*, IPR2017-00500, Paper 7 at 15 (USPTO June 21, 2017). Petitioner's obviousness grounds here are not just similar, Gagnon itself was evaluated by the Exanminer during prosecution. *See, e.g.,* Ex. 1003 at 5 (Information Disclosure Statement by Applicant dated August 26, 2021); 15 (within the background of the invention); 19 (Notice of References City). The Examiner substantively considered Gagnon within the Notice of Allowability, Ex. 1003 at 42, and allowed the claims of the '947 Patent. *See Unified Patents*, IPR2016-01571, Paper 10 at 11. Within the issued '947 Patent, Gagnon is discussed at length in the Background of the Invention. Ex. 1001 at 2:47-67.

As discussed, *infra,* Petruzella and Kambla provide no new information over Gagnon. Kambla's log diameter measurements are already, and more efficiently,

performed within Gagnon and Petruzella's programmable logic controllers are discussed within Gagnon as well. Nicholson's Petition fails to raise any logical arguments regarding how any combination of Kambla, Petruzella, and Gagnon would be different than Gagnon alone.

A 'new' reference raised before the board should include a discussion of the substantive differences from the prosecution art. *Becton*, IPR2017-01586, Paper 8 at 21. However, Petitioner provides not only no new substantive art, but no new evidence or arguments that would compel a second look at exactly the same art which the Examiner was acutely aware of. *See Dist., Inc. et al. v. INO Therapeutics LLC*, IPR2016-00781, Paper 10 at 12 (USPTO Aug. 25, 2016) ("Although Petitioner now relies on [newly cited references], its underlying argument—that the prior art taught or suggested the [particular elements]—is essentially the same as that raised [previously]."). Petitioner fails altogether to "specifically identify any errors by the Office in allowing the [challenged] patent[.]" See *Dorco*, IPR2017-00500, Paper 7 at 18.

IV. PETITIONER HAS FAILED TO ESTABLISH OBVIOUSNESS.

A. Grounds 1 to 3: Petitioner relies upon aspirational statements alone.

Petitioner repeatedly relies upon aspirational statements within the references to assert obviousness. "It is insufficient to name or describe the desired subject matter[.]" *Elan Pharms., Inc. v. Mayo Found. for Med. Educ. & Rsch.*, 346 F.3d

1051, 1055 (Fed. Cir. 2003). Rather, "the reference must also enable one of skill in the art to make and use the claimed invention." *Bristol–Myers Squibb v. Ben Venue Laboratories, Inc.*, 246 F.3d 1368, 1374, 58 USPQ2d 1508, 1512 (Fed.Cir.2001). Yet, Petitioner repeatedly relies upon aspirational statements alone which lack any enablement.

For instance, Gagnon asserts that ""knowing or measuring upstream the intrinsic characteristics of the [sic] each log entering the debarker such as diameter and wood species" may be used to generate operating parameters. Ex. 1004 at ¶ 6. However, beyond detection of diameter and surface detection, Gagnon provides no actual solution for the detection of wood species beyond the use of a skilled human operator.

Petitioner alleges that Kambla "provides a method for automating the detection of tree species." Petition at 27. However, Kambla relies on a user to "initially set the object parameters, i.e., reference dimension, grade/species of the logs in the stack or pile" which are then used for stratification of log diameter. Ex. 1006 at ¶ 114. Kambla provides no enablement of a method by which tree species would be detected beyond a single statement that a CNN could be generated for such. Such vague statements lack detail to allow a POSITA to implement the solution without undue experimentation.

Petitioner's reliance upon the Kambla and Gagnon inventors' aspirations falls far short of the enablement required in a prior art reference. As such, all arguments within the Petition based upon such aspirational statements should be struck.

B. Grounds 1 and 3: A POSITA would not be motivated to combine Gagnon with Kambla or Petruzella.

A POSITA would have no reason to combine Gagnon with Kambla and/or Petruzella, as the inventions within Kambla and Petruzella are redundant to the invention in Gagnon.

Kambla's invention is directed to the use of a camera to measure the volume of logs in a pile and the respective diameters of each log. Ex. 1006 at Abstract ("A system for determination of the volume of a stack of logs comprises digital image acquisition of a stack end with a known reference dimension, image display and image recognition for determination of the total volume of timber."). However, Gagnon already incorporated a well-known method for measurement of the diameter of an undebarked log. Ex. 1004 at ¶ 49. A POSITA would not have any motivation to create a duplicative diameter measurement, adding the requirement of a camera *and* a reference measurement, through the combination of Gagnon and Kambla.

Similarly, Gagnon discloses the use of a programmable logic controller (PLC) to control the debarking operating parameters based upon the results of the output. Ex. 1004 at ¶ 49. Petruzella, an introductory textbook that defines programmable logic controllers, is duplicative in describing the PLCs already incorporated into

Gagnon. A POSITA would have no need, or motivation, to combine redundant references.

For any combination of Gagnon with Petruzella and/or Kambla, it would be unnecessary to "review on multiple grounds of equivalent scope[.]" *Samsung Electronics Co., Ltd. v. Parthenon Unified Memory Architecture LLC*, 2016 WL 1613870 (Patent Tr. & App. Bd., 2016). Essentially, Petitioner asks the Board to review anticipation by Gagnon, which was already considered by the Examiner, as obviousness. *See Fujifilm Corporation v. Sony Corporation,* 2017 WL 6271629 (Patent Tr. & App. Bd., 2017) (rejecting review where substance of obviousness analysis is substantially identical to analysis of anticipation analysis). Such as redundant challenge should not be entertained. *Redline Detection, LLC v. Star Envirotech, Inc.*, 811 F.3d 435, 451 (Fed. Cir. 2015)(Board rejected grounds where "teaching of some of these additional references are themselves redundant").

C. Ground 2: A POSITA would not be motivated to combine Gagnon with Ido.

A POSITA would have no motivation to combine Ido, which was directed towards a different technological problem entirely, with Gagnon. Ido does not mention debarking. Ex. 1005. Instead, Ido is focusing on using a "special tree image" to identify tree species using a CNN. *Id.* Ido requires a perfect picture of a living tree standing upright. *Id.* Even then, Ido admits its system is at best accurate less than three quarters of the time. *Id.* at § 4 ("We . . . obtained the highest

recognition accuracy of 74.7%). Ido would never be acceptable in the logging industry for several reasons.

First, Ido's solution was focused at the removal of artifacts, such as tags, from an image in order to use the remaining image for classification. Ex. 2037 at ¶ 110. As such, Ido was published within a journal aimed at image processing rather than towards the lumber industry. A POSITA would likely not even identify Ido while conducting research related to log identification and/or debarking.

Second, a POSITA with experience in the logging industry would understand that the challenges faced in the identification of a living tree is substantially different than the challenges faced in identification of a log which has been felled, skidded, delimbed, and transported. *See* Ex. 2037 at §§ VI.B, VII.B.7, IX.B; Ex. 2034 at ¶¶ 30-31. Ido focuses on the identification of *living trees*. Gagnon, and the '947 Patent, focus on logs. A POSITA would assume that Ido's invention would either not work on logs at all or would face significantly higher error rates due to the degraded surfaces of logs.

Third, Ido's accuracy was incredibly low. Ex. 1004 at § 4. Within a sawmill, the bark contamination rate generally must be less than 10 percent. Ex. 1004 at ¶ 93; Ex. 2037 at ¶ 145; Ex. 2034 at ¶ 20(c). A POSITA would understand that Ido's substantial error rate of over 25 percent would be unacceptable in determining the acceptable debarking parameters, especially where human operators would still be

more reliable. Ex. 2037 at ¶ 104. If anything, Ido's substantial error rate would teach away from the use of the image classification in combination with Gagnon.

D. Grounds 1-3: No combination of Gagnon, Kambla, Ido, and/or Petruzella teaches predictive controls.

No single reference, nor any combination of the references, raised by Nicholson teaches the predictive controls taught by the '947 Patent. Gagnon teaches the use of output debarking quality data to control operating parameters of a debarker for the next log or input. This is a retrospective or feedback control. The '947 Patent describes the use of predictive or feedforward controls, which use data derived from the input to control the action taken upon the input. Essentially, feedback controls drive by looking in the rearview mirror, whereas feedforward controls look out ahead. The difference between a feedback and a feedforward system are significant and have been the basis for patent novelty. *See Sunoco Partners Mktg. & Terminals L.P. v. Powder Springs Logistics, LLC*, 624 F. Supp. 3d 473, 482 (D. Del. 2022), *aff'd in part, rev'd in part,* No. 2023-1218, 2026 WL 122544 (Fed. Cir. Jan. 16, 2026)(examiner allowing feedback system over feedforward system prior art).

The way in which Gagnon and the '947 Patent determine operating parameters relies upon fundamentally different data. Gagnon relies upon the collection of data at output related to the error or deficiencies of the debarking process. The '947 Patent relies upon collection of data from raw materials at input or prior to processing. Gagnon uses the output data to reduce similar errors from occurring in the future,

while the ’947 Patent uses incoming data to eliminate errors before they occur. “The way these elements accomplish their respective functions cannot be said to be substantially the same.” *Kahn v. Gen. Motors Corp.*, 135 F.3d 1472, 1478 (Fed. Cir. 1998)(discussing a feedback versus feedforward system).

Petitioner’s assertion that the feedback controls of Gagnon render obvious the feedforward controls of the ’947 Patent oversimplifies the differences between the two systems. This is not merely moving the camera from one end to the other, but redesigning the entire system to predictively act versus merely react.

E. Ground 2: Gagnon in light of Ido, Petruzella, and/or Kambla does not teach the identification of moisture content or knots.

With respect to Claim 4, Petitioner offers no argument that Gagnon in light of Ido, Kambla, and/or Petruzela offers a method by which the moisture level or intensity of know presence on the log is measured. *See* Ex. 1001 at Cl. 4[b]-[c]. Accordingly, Petitioner seems to tacitly admit Claim 4 is not obvious.

V. PETITIONER FAILS TO ESTABLISH THAT THE CLAIM 1 AND ITS DEPENDENT CLAIMS ARE PATENT-INELIGIBLE UNDER § 101

Petitioner’s 35 U.S.C. § 101 challenge rests on a series of related arguments that improperly reduce the claimed invention to abstract information processing while disregarding the claimed technological context and real-world application. When properly analyzed under the Supreme Court’s framework set forth in *Alice Corp. Pty. v. CLS Bank Int'l,* 573 U.S. 208 (2014), each of Petitioner’s theories fails.

The challenged claims, including independent claim 1, are directed to a specific technological improvement in industrial process control and, in any event, recite significantly more than any alleged abstract idea.

A. At *Alice* Step One, Claim 1 Is Not Directed to an Abstract Idea

At the first step of the *Alice* inquiry, the Board must determine whether the claims are directed to an abstract idea, considering the claims as a whole and focusing on their character and technological objective. Petitioner first contends that claim 1 is directed to the abstract idea of "collecting, analyzing, and outputting data." That contention fails because it strips away the very features that define the invention. The claim is not directed to data processing in the abstract, but to a closed-loop industrial control method that governs how a physical debarking machine operates on real-world materials.

Claim 1 requires performing a contactless characterization of an undebarked log, identifying physical characteristics of that log using a trained deep learning model, computing operating parameters of a debarker based on those characteristics, and sending those parameters to the debarker to control its operation. The claim thus begins with measurement of a tangible article and ends with the modification of machine behavior. The focus of the claim is not the generation of information, but the real-time control of industrial equipment based on physical inputs. By recasting

this process as mere "data collection and analysis," Petitioner impermissibly abstracts away the physical and technological context that defines the invention.

Petitioner next contends that the claims are directed to the abstract idea of applying a generic machine learning model. That argument likewise fails. The Federal Circuit and the USPTO have repeatedly emphasized that claims must not be evaluated at a high level of generality, particularly where machine learning is used in a specific technological application. Here, the deep learning model is not claimed in isolation; it is used to extract physical characteristics of moving logs and to drive the operation of a debarker in real time. The claims therefore do not seek to monopolize machine learning, but rather apply it in a specific industrial environment to control a physical process. The Petition itself acknowledges that the claimed system uses scanning hardware and generates operating parameters that are sent to a debarker for execution, confirming that the invention is rooted in industrial machinery rather than abstract analysis.

Petitioner further argues that the claims merely automate a known process. But even if prior systems relied on identifying log characteristics and adjusting debarker parameters, the claims are directed to a particular technological implementation that solves a recognized problem—namely, the inability of prior systems to adjust debarking parameters in real time in response to changing log characteristics. The claimed integration of upstream, contactless sensing with

machine-learning-based characterization and automated control is not a generic automation of human activity, but a specific technological solution that improves industrial operations.

The non-abstract nature of the claims is further confirmed by their close correspondence to multiple USPTO eligibility examples that have been expressly designated as patent-eligible. First, the claimed contactless characterization of a physical log corresponds to the sensor-based data acquisition steps found eligible in Example 38 and Example 47, which involve real-world measurement of physical conditions rather than abstract data manipulation. Second, the use of a trained deep learning model to identify physical characteristics mirrors Examples 42 and 43, which confirm that applying neural networks or image-based machine learning to real-world objects constitutes a technological application, not an abstract idea. Third, the steps of computing operating parameters and sending those parameters to a debarker align with Example 46, where algorithmic processing is used to control a physical system. In particular, claim 1 recites a closed-loop control architecture in which sensor input is processed and used to modify machine operation in real time.

The claimed invention thus goes beyond data analysis and instead corresponds directly to the type of practical, machine-integrated applications that the USPTO has identified as patent-eligible. Indeed, claim 1 combines the features of multiple eligibility example including sensor-based measurement, AI-driven

characterization, and real-time machine control, making it an even clearer case for eligibility than any single example alone.

The claimed contactless characterization of physical logs aligns with examples involving sensor-based acquisition of real-world data; the use of a trained deep learning model to identify characteristics corresponds to examples involving neural networks and image analysis; and the computation and transmission of operating parameters to a debarker aligns with examples involving the control of a physical system. Most importantly, claim 1 does not merely resemble one such example, it combines these features into a unified control process. It integrates sensor-based measurement, machine-learning-driven characterization, and real-time machine control into a single operation. Because each of these elements independently reflects a practical technological application, their combination presents an even stronger case that the claims are not directed to an abstract idea.

Petitioner's additional suggestion that the debarker is merely a downstream recipient of data also fails. The claim expressly requires sending computed operating parameters to the debarker, which uses those parameters to alter its operation. This is not a situation where information is merely displayed or reported; the claim recites direct control of a physical machine, which is central to the claimed invention and cannot be disregarded in the *Alice* step-one analysis.

For all of these reasons, when properly evaluated as a whole, claim 1 and the remaining challenged claims are directed to a specific technological improvement in industrial process control, not to an abstract idea. The *Alice* inquiry should therefore end at step one.

B. Even If Claim 1 Recites an Abstract Idea, It Includes Significantly More Under *Alice* Step Two

Even assuming, arguendo, that the claims could be said to involve an abstract idea, Petitioner's challenge still fails at *Alice* step two. At that step, the question is whether the claim elements, individually and as an ordered combination, amount to significantly more than the alleged abstract idea. Here, they plainly do.

Petitioner argues that the elements of the claims are routine and conventional, pointing to prior art references that purportedly disclose sensors, machine learning models, and debarker control systems. But this argument improperly dissects the claims into individual components. The relevant inquiry is whether the ordered combination of elements is conventional, and Petitioner's own arguments demonstrate that it is not. The Petition relies on combining multiple distinct references—one for debarker control, another for neural-network-based log characterization, and still others for additional features—to approximate the claimed invention. That reliance on multi-reference combinations underscores that the claimed integration was not conventional. [ai-lab.exparte.com]

The claims recite a specific architecture in which a log is characterized upstream using contactless sensing, its characteristics are identified using a trained deep learning model, operating parameters are determined based on those characteristics, and those parameters are immediately transmitted to control a debarker. This ordered combination produces a real-time control loop that was not available in prior systems, which relied on downstream feedback or manual adjustment. The result is an improvement in industrial performance, including reduced fiber loss and improved debarking efficiency. Such an improvement to the operation of a technological process constitutes an inventive concept.

Petitioner also contends that the claims are result-oriented or functional. That contention fails because the claims do not merely recite a desired outcome, but instead specify how the outcome is achieved—through contactless characterization, machine-learning-based identification, parameter computation, and machine control. The inclusion of these concrete steps distinguishes the claims from those that merely state a goal without reciting a technological means of achieving it.

Finally, Petitioner's implicit preemption concerns are unfounded. The claims do not cover all uses of machine learning, all methods of characterizing logs, or all approaches to controlling debarking equipment. Instead, they are limited to a specific implementation involving contactless characterization, trained deep

learning models, and real-time control of a debarker. This narrow scope confirms that the claims do not risk preempting any abstract idea.

C. Dependent Claims 2–10

Each of the dependent claims further limits claim 1 by introducing additional technological detail, thereby reinforcing that the claimed invention is directed to a specific industrial implementation rather than an abstract idea.

Claim 2 requires that the contactless characterization be performed using a scanning device. This limitation ties the claimed method to a specific class of physical hardware used to acquire real-world data from a moving log. By requiring a particular sensing modality, claim 2 further grounds the invention in concrete technology and confirms that the claimed method cannot be reduced to a mental process or abstract analysis.

Claim 3 similarly requires that characterization be performed using one or more sensors. This limitation reinforces that the claimed invention operates through physical interaction with real-world objects and environmental inputs. The use of sensors to obtain data about a tangible article further distances the claim from abstract data manipulation and aligns it with recognized forms of industrial measurement and monitoring.

Claim 4 recites that the identification of specific characteristics includes specific physical attributes such as log species, moisture level, and knot intensity.

This limitation makes explicit that the claimed method operates on physical properties of real materials, not on abstract or generalized data. By specifying concrete characteristics tied to the physical condition of the log, claim 4 further anchors the invention in the technological domain of wood processing.

Claim 5 requires that operating parameters be indexed in a table associated with log characteristics. This limitation introduces a specific implementation mechanism for parameter selection, reflecting a structured approach to mapping measured characteristics to machine settings. Rather than merely computing an abstract result, the claim recites a defined technical framework for associating inputs with control outputs, reinforcing the practical implementation of the invention.

Claim 6 further refines claim 5 by requiring that the indexation take into account the intensity level of characteristics. This limitation adds a layer of technical specificity to how operating parameters are determined, reflecting a more granular control strategy tied to real-world variations in log properties. This additional specificity further demonstrates that the claims are directed to a concrete, engineered solution rather than a general abstraction.

Claim 7 recites a detailed process for training the deep learning model, including selecting representative samples, scanning logs, classifying data, and generating an identification score. This limitation further distances the invention from abstraction by specifying how the model is constructed and validated. It reflects

a concrete technical process that cannot be performed mentally and involves real-world data acquisition and iterative model development.

Claim 8 requires that the deep learning model be automatically trained using characterization data, introducing adaptive behavior based on real-time inputs. This limitation reflects an improvement to the operation of the system itself, enabling continuous refinement based on observed conditions and further reinforcing that the invention operates within a technological framework.

Claim 9 recites manual training with human validation, which provides an alternative but still concrete method for implementing the claimed system. This limitation underscores that the invention encompasses specific, real-world processes for developing the model, rather than abstract mathematical concepts divorced from application.

Claim 10 requires that characterization further comprise external data, such as environmental conditions. This limitation expands the technical inputs considered by the system and demonstrates that the invention integrates multiple sources of real-world data to control machine operation. The incorporation of external physical data further reinforces the practical, industrial nature of the claimed method.

Taken together, these dependent claims add layers of technical specificity that further confirm the patent-eligibility of claim 1. None of these additional limitations approach abstraction; instead, they narrow the claims to particular implementations

involving sensors, physical properties, data structures, and machine learning processes.

Petitioner's § 101 challenge relies on an improper abstraction of the claims and a piecemeal analysis of their elements. When evaluated under the correct legal framework, the claims are directed to a specific technological solution for improving industrial process control, not to an abstract idea. Even if an abstract idea were present, the claims recite a non-conventional and practical application that satisfies *Alice* step two. Petitioner has therefore failed to meet its burden of demonstrating a reasonable likelihood that the challenged claims are unpatentable under § 101, and its request for relief should be denied.

VI. INDEPENDENT CLAIM 11 AND ITS DEPENDENT CLAIMS ARE PATENT-ELIGIBLE UNDER § 101

Petitioner's § 101 arguments fail for the additional and independent reason that system claim 11 and its dependent claims recite a specific technological architecture comprising interrelated physical components configured to perform real-time industrial control of a debarking apparatus. When analyzed under the *Alice* framework, these claims are even further removed from any alleged abstract idea than claim 1.

A. At *Alice* Step One, Claim 11 Is Not Directed to an Abstract Idea

At *Alice* step one, claim 11 is not directed to an abstract idea because it is directed to a concrete system composed of physical elements arranged in a particular

manner to achieve a technological objective. The claim expressly requires, inter alia: (i) a contactless log characterization sensor, (ii) a characterizing unit comprising a deep learning model, (iii) a debarker optimizer configured to compute operating parameters, and (iv) a debarker controller configured to control a debarker using those parameters. These components are not recited in isolation, but as part of a defined system architecture in which data flows from physical sensors, through a characterization unit, into an optimization module, and ultimately into a control system that governs machine operation.

Petitioner's attempt to characterize the invention at a high level of generality as merely "collecting, analyzing, and outputting data" fails even more clearly with respect to claim 11. Unlike purely functional or result-oriented claims, claim 11 recites specific system components and their interconnections, which together define how the claimed functionality is implemented. The presence of these structural limitations makes clear that the claim is not directed to an abstract idea, but to a particular machine configuration for controlling industrial equipment. Courts have repeatedly held that claims directed to specific technological systems and arrangements of components are not abstract, particularly where, as here, the system is directed to controlling physical machinery.

Petitioner's related argument that the claims are directed to the use of generic machine learning likewise fails in the context of claim 11. The deep learning model

is not claimed in the abstract, but as part of a characterizing unit coupled to physical sensors and a debarker control system. The claim recites a specific role for that model, identifying physical characteristics of logs based on measured attributes, and integrates it into a broader system that performs real-time control of a debarking apparatus. The claim therefore reflects a technological system that applies machine learning in a defined industrial context, rather than an abstract idea involving machine learning generally.

The eligibility of claim 11 is further confirmed by its consistency with multiple USPTO patent eligibility examples involving system claims and physical-world applications. First, the recited contactless log characterization sensor corresponds to the sensor-based data acquisition steps found eligible in Examples 38 and 47, which involve real-world measurement of physical conditions using defined hardware components rather than abstract data manipulation. Second, the characterizing unit comprising a trained deep learning model mirrors Examples 42 and 43, which confirm that applying neural networks or image-based machine learning to real-world objects constitutes a technological application, not an abstract idea. This is particularly true where, as here, the model is embedded within a system that processes physical inputs. Third, the debarker optimizer and debarker controller, which compute operating parameters and control a debarker based on those

parameters, align closely with Example 46, where algorithmic processing is used to control a physical system.

Claim 11 expressly recites the system components that implement this control loop, including the optimizer and controller that translate sensor input into machine operation, thereby defining a concrete system architecture for real-time industrial control. The claimed system thus goes beyond data analysis and instead corresponds directly to the type of practical, machine-integrated applications that the USPTO has identified as patent-eligible. Indeed, claim 11 combines the features of multiple eligibility examples based on sensor-based measurement, AI-driven characterization, and real-time machine control within a defined system architecture, making it an even clearer case for eligibility than any single example alone.

Like those examples, claim 11 recites a system that acquires real-world data, processes that data using a computational model, and uses the results to control a physical system. Indeed, the claim not only aligns with examples involving sensor-based measurement and machine-learning-based analysis, but also recites the downstream control components that implement the resulting decisions in a physical device. By combining these elements into a unified system, claim 11 falls squarely within the category of patent-eligible technological systems recognized by the USPTO.

B. Even If Claim 11 is Found to Recite an Abstract Idea, It Includes Significantly More Under *Alice* Step Two

Even if the Board were to conclude that claim 11 implicates an abstract idea at some level, the claim plainly satisfies *Alice* step two because it recites significantly more than any such idea. The claim defines a specific arrangement of physical and computational components that operate together to control a debarker in real time, which constitutes a practical application of any alleged abstract concept. The inclusion of a debarker controller configured to control a physical machine based on computed parameters is particularly significant, as it demonstrates that the claim is directed to changing the operation of machinery, not merely generating information.

Petitioner's argument that the components of claim 11 are routine and conventional is likewise unavailing. As with claim 1, Petitioner relies on separate prior art references to identify individual elements of the claimed system, but fails to show that the claimed combination and arrangement of those elements was conventional. To the contrary, Petitioner's reliance on multiple references—combining a debarker control system with separate teachings relating to neural networks and sensors—underscores that the claimed architecture was not well-understood, routine, or conventional as a whole. The claims recite a specific integration of upstream sensing, machine-learning-based characterization, parameter optimization, and downstream machine control that improves the

performance of industrial debarking processes. This integrated architecture constitutes an inventive concept under *Alice* step two.

Petitioner's contention that the claims are functional or result-oriented fails for similar reasons. Claim 11 does not merely recite a desired outcome, such as improved debarking, but instead defines a particular system configuration that achieves that outcome. The recited components—including the characterization sensor, characterizing unit, optimizer, and controller—each play defined roles in the overall operation of the system, and their interaction is expressly recited. This level of structural detail distinguishes the claims from those that merely state a result without specifying a technological implementation.

The dependent claims further reinforce the patent-eligibility of the system claims by adding additional technological detail and specificity. For example, the dependent claims recite specific training modalities for the deep learning model, additional sensors for capturing environmental or log-related data, and particular configurations for processing and indexing operating parameters. These limitations further tie the invention to concrete technological implementations and underscore that the claims are directed to a specific industrial system, not an abstract concept.

Finally, claim 11 and its dependents do not raise meaningful preemption concerns. They do not attempt to cover all systems that use machine learning, all log characterization systems, or all debarker control systems. Instead, they are limited

to a particular configuration of components that operate together to achieve a specific technological result. This narrow and technology-focused scope further supports eligibility.

In sum, independent claim 11 and its dependent claims are directed to a specific, concrete system for real-time industrial control of debarking machinery, not to an abstract idea. Even if any abstract idea were implicated, the claims recite a non-conventional and practical application that satisfies *Alice* step two. Petitioner has therefore failed to establish that these claims are unpatentable under § 101.

C. Dependent Claims 12–18

The dependent claims of claim 11 likewise add specific technological limitations that further reinforce the eligibility of the claimed system.

Claim 12 recites that the deep learning model is trainable, which clarifies that the system includes the capability to adapt based on input data. This limitation reflects a functional characteristic of the system that contributes to its technological operation, rather than an abstract concept.

Claim 13 further specifies that the model is automatically trainable using measured attributes, which ties the training process directly to real-world data acquired by the system. This reinforces that the system is grounded in physical inputs and real-time operation, supporting its classification as a practical technological system.

Claim 14 recites manual training with human intervention, providing an alternative training mechanism that likewise involves concrete implementation steps. As with claim 9, this limitation reflects practical methods of configuring the system rather than abstract reasoning.

Claim 15 requires that the characterizing unit take into account the intensity levels of identified characteristics when indexing parameters, adding specificity to how the system processes and applies data. This limitation further defines the internal operation of the system in a technical manner, reinforcing the existence of a concrete implementation.

Claim 16 introduces one or more light sources for illuminating the log, explicitly tying the system to physical hardware used to improve data acquisition. This limitation underscores that the system interacts with the physical world and includes components designed to enhance measurement accuracy.

Claim 17 recites external sensors identifying attributes external to the log, such as environmental conditions. This limitation demonstrates that the system integrates multiple physical data sources, further reinforcing its technological nature and practical application.

Claim 18 specifies that the log measurement device may include a line scanner, area scan camera, or infrared camera, identifying concrete classes of sensing hardware. This limitation further anchors the claim in real-world technology

and makes clear that the system is not an abstract construct but a physical implementation.

These dependent system claims add further structural and functional detail to claim 11, reinforcing that the invention is directed to a specific technological system for controlling industrial machinery. Each limitation narrows the scope of the claim and further distances it from any alleged abstract idea.

Each challenged claim, whether independent or dependent, is directed to a specific technological implementation of real-time industrial control using sensor data and machine learning, not to an abstract idea. The dependent claims add meaningful technical limitations that further ground the invention in concrete technology and reinforce its eligibility under both steps of the *Alice* framework. Accordingly, Petitioner has not established a reasonable likelihood that any challenged claim is unpatentable under § 101.

VII. CLAIMS 7 AND 8 ARE NOT INDEFINITE.

"Predetermined value"—the only term Petitioner argues is indefinite—is sufficiently definite. The '947 Patent at Claim 7[e] states: "considering the deep learning model trained if the identification score is different from a predetermined value." When read in the context of the specification as a whole, the 'predetermined value' is clear to a POSITA.

'Predetermined value' is a term of degree. Terms of degree are not required "to provide absolute mathematical precision" but rather to "'provide objective boundaries for those of skill in the art.'" *Polaris PowerLED Tech., LLC v. VIZIO*, Inc., 2019 WL 13043592, at *16 (C.D. Cal. Nov. 26, 2019), *order clarified*, 2020 WL 1060363 (C.D. Cal. Jan. 21, 2020)(quoting *Interval Licensing LLC v. AOL, Inc.,* 766 F.3d 1364, 1370-71 (Fed. Cir. 2014)). A term of degree, however, cannot "lend[] itself to scattershot infringement analysis" which could produce multiple results. *Liberty Ammunition, Inc. v. United States*, 835 F.3d 1388, 1389 (Fed. Cir. 2016).

Petitioner attempts to confuse the issue of image classification accuracy by citing to an article which describes ways to further break-down and analyze image classification accuracy into ROC categories such as "true positives, false positives, or a combination of any two or more of these metrics." Ex. 1002 at ¶¶ 344-346 (citing Ex. 1011). The ROC analysis cited by Petitioner is most commonly used in medical diagnostics, *see* Ex. 1011 at 1, and there is no argument as to why such analysis would be relevant to debarking machines or forestry. Further, Petitioner, nor their expert, provides reasoning as to why accuracy of the classification alone would be insufficient to determine if the identification score exceeds a predetermined value such that the model is satisfactorily trained for use in production. Petitioner's attempts to manufacture a *Teva* problem fall flat.

Here, the 'predetermined value' is an accuracy which is "satisfying" such that "the model may be considered ready and used for determined log characteristics in production[.]" '947 Patent at 8:11-12. With a debarking system, the operating parameters must be accurately tuned to the characteristics of the log in order to achieve minimal remaining bark and reduced fiber loss. Per Dr. Pazzani, a POSITA would understand "the industry typically looks for wood chips containing less than 1 percent bark." Ex. 2001 at 74:1-7 (quoting Ex. 1002 at ¶ 30).

Any misclassification (whether a false negative or false positive) of the undebarked log would necessarily effect debarking quality. Ex. 2037 at ¶¶ 173-176. The wood products industry has set standards for remaining bark and fiber loss. *Id.* at ¶ 145; Ex. 2034 at ¶ 20(c); Ex. 2001 at 71:19-23. A POSITA would understand the predetermined value of classification accuracy to be reflective of the classification accuracy necessary to achieve debarking parameters resulting in efficient debarking. Ex. 2037 at ¶¶ 173-176. Thus, a POSITA would understand 'predetermined value' to be sufficiently definite as it would indicate the necessary classification accuracy to achieve industry-compliant debarking quality.

VIII. CONCLUSION

For all the above reasons, Petitioner has failed to meet its burden to show that the '947 Patent is obvious, indefinite, or ineligible. Bid Group Technologies Ltd.

respectfully requests that the Board confirm the patentability of the Challenged Claims of the ’947 Patent.

Dated: May 13, 2026

/R. Scott Johnson/
R. Scott Johnson
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Counsel for Patent Owner Bid Group Technologies Ltd.

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), the undersigned hereby certifies that the foregoing Patent Owner’s Response to Petition contains 6,814 words, excluding parts of this Patent Owner’s Response exempted under § 42.24(a)(1), as measured by the word-processing system used to prepare this paper.

Dated: May 13, 2026

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CERTIFICATE OF SERVICE

Per agreement of the parties and pursuant to 37 C.F.R. ¶ 42.6(e), the undersigned certifies that a copy of this Patent Owner's Response to Petition was served on May 13, 2026, electronically via email on the following:

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