

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD., and
SAMSUNG ELECTRONICS, AMERICA, INC.,

Petitioners

v.

CERENCE OPERATING COMPANY,
Patent Owner.

Case IPR2024-01267
U.S. Patent No. 9,026,428

PETITIONERS' REPLY TO PATENT OWNER'S RESPONSE

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PETITIONERS' UPDATED EXHIBIT LIST

Exhibit No.	DESCRIPTION
1001	U.S. Patent 9,026,428 (“’428 <i>Pat</i> ”)
1002	Declaration of Jean Renard Ward (“ <i>Ward</i> ”)
1003	Curriculum Vitae of Jean Renard Ward
1004	File History of U.S. Patent 9,026,428
1005	Certified Translation of JP 2006323502A (“ <i>Arai</i> ”)
1006	U.S. Patent 5,161,245 (“ <i>Fenwick</i> ”)
1007	EP0830668B1 (“ <i>Baker</i> ”)
1008	U.S. Patent 6,636,749 (“ <i>Holmes</i> ”)
1009	Excerpts from Microsoft Computer Dictionary (5th ed. 2002) (“ <i>Computer Dictionary</i> ”)
1010	Excerpts from Merriam-Webster’s Collegiate Dictionary (10th ed. 1996) (“ <i>Merriam-Webster’s Collegiate Dictionary</i> ”)
1011	U.S. 5,528,266 (“ <i>Arbeitman</i> ”)
1012	U.S. Pub. 2011/0310581 (“ <i>Yokote</i> ”)
1013	RAND REVIEW, Vol. 22, No. 1 (Fall 1998) (“ <i>Rand Review</i> ”)
1014	Tappert, IEEE TRANSACTIONS ON PATTERN ANALYSIS AND MACHINE INTELLIGENCE, The State of the Art in On-Line Handwriting Recognition, Vol. 12, No. 8 (Aug. 1990) (“ <i>Tappert</i> ”)
1015	U.S. 6,005,973 (“ <i>Seybold</i> ”)
1016	U.S. 7,158,678 (“ <i>Nagel</i> ”)

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1017	U.S. 5,491,495 (“ <i>Ward</i> ’495”)
1018	Cover Pleading of Plaintiff Cerence Operating Company’s Disclosure of Asserted Claims and Infringement Contentions, Dated March 11, 2024
1019	Docket Control Order from <i>Cerence Operating Company v. Samsung Electronics Co., LTD, et al.</i> , No. 2:23-cv-0482-JRG-RSP (ECF 029) (E.D. Tex. April 16, 2024)
1020	Letter to James S. Tsuei from Jin-Suk Park, dated December 20, 2024
1021	U.S. 6,539,113 (“ <i>Kleeck</i> ”)
1022	Deposition Transcript of Eric Koskinen, Ph.D. dated July 9, 2025 (<i>Koskinen Depo.</i>)
1023	Deposition Transcript of Jonas Andersson dated July 16, 2025 (<i>Andersson Depo.</i>)

I. INTRODUCTION

Petitioners submit this Reply to Patent Owner's ("PO") Response ("POR") concerning claims 1-3, 7-9, and 12-13 ("Challenged Claims") of U.S. Patent No. 9,026,428 ("the '428 patent"). PO's arguments should be rejected and the claims found unpatentable and cancelled for the reasons set forth in the Petition and accompanying exhibits, the Board's decision to institute, the cross-examination testimony of PO's expert Eric Koskinen and fact witness Jonas Andersson, and the reasons herein.

PO's arguments miss the mark. *Arai*, *Fenwick*, and *Baker* are all analogous to the '428 patent and PO's suggestion to the contrary is premised on alleged capabilities and benefits of the '428 patent not recited in any claims. PO harps on alleged difficulties in combining *Arai*'s, *Fenwick*'s and *Baker*'s algorithms, but PO ignores that the true test of obviousness is whether a POSITA would have been motivated to combine *teachings* from references, not whether a POSITA could have bodily incorporated *Fenwick*'s (or *Baker*'s) algorithms into *Arai*. Finally, PO's arguments that *Arai-Fenwick* does not disclose all claim limitations are based on its misreading of *Arai*'s and *Fenwick*'s disclosures and the arguments presented in the Petition, and also implicitly construing the claims to read into them limitations not otherwise recited.

II. THE BOARD SHOULD DISREGARD THE OPINIONS OF PATENT OWNER'S EXPERT

“Patent Owner does not dispute the POSITA definition proposed by Petitioner” (POR, 16), and PO’s expert Dr. Koskinen also “accept[s] and agree[s] with this POSITA definition” (EX2007 (“*Koskinen*”) ¶21). While Dr. Koskinen claims to be a POSITA (*Id.* ¶22), his CV and testimony indicate otherwise. Dr. Koskinen has no “experience working with handwriting recognition, [or] user interfaces incorporating on-line recognition technologies.” *Id.* ¶21; *Koskinen Depo.*, 35:24-36:8, 52:6-53:14, 54:12-19, 54:24-55:17, 55:25-56:19, 57:25-60:24, 61:25-65:5, 68:1-70:14. At best, he claims experience with “user interfaces,” but not those that incorporate “on-line recognition technologies” (as required by the POSITA definition). *See id.* Instead, Dr. Koskinen argues that his compiler experience parsing source code qualifies as “related technical fields” to handwriting recognition because parsing “involves recognizing words.” *See Koskinen Depo.*, 10:13-11:11, 31:21-32:9, 35:24-36:14, 49:21-50:15, 55:25-56:19, 64:6-19, 68:1-70:14. But parsing source code involves recognizing typewritten “words,” not *handwritten* letters/words. Accordingly, the Board should disregard Dr. Koskinen’s testimony because he does not qualify as a POSITA.

III. GROUND 1: *ARAI* IN COMBINATION WITH *FENWICK* RENDERS CLAIMS 1-3, 7-9, AND 12-13 OBVIOUS

A. *Arai* and *Fenwick* are analogous art to the '428 patent.

As explained in the Petition, *Arai* and *Fenwick* are analogous to the '428 patent because they are in the same field of endeavor as, and reasonably pertinent to, the problems addressed by the '428 patent. Petition, 5. PO does not dispute this; rather, it argues *Arai* and *Fenwick* are directed to allegedly “entirely different recognition algorithms than the '428 patent.” POR, 1, 19. PO emphasizes that the '428 patent uses “innovative *contextual analysis*” and “*elaborate linguistic knowledge*,” as well as a “*history*” of characters input by a user “*to increase the speed and accuracy of handwritten characters*,” and clears an intermediate buffer “*by analyzing the context of two or more characters or words*” (POR, 20), which *Arai* and *Fenwick* allegedly lack.¹ According to PO, the '428 patent “perform[s] contextual analysis at *multiple* different stages” (*id.*, 21) and allows for character recognition “across *multiple* languages” (*id.*, 22) (emphases in original). Yet, none of these features are recited in the Challenged Claims, nor has PO offered to construe these claims to incorporate these concepts.

¹ All emphases are added unless noted otherwise.

PO further criticizes *Arai* for allegedly “**lack[ing]** any disclosure of using **contextual analysis** at any stage of the recognition process, further **limiting the speed and accuracy** of *Arai*’s recognition process when compared to the ’428 patent’s process.” POR, 25 (emphases modified). Yet, the claims do not require contextual analysis.² See also *Koskinen Depo.*, 164:20-165:4 (“To meet the limitation of claim 1, you don’t necessarily need to use contextual or predictive information.”). Similarly, nothing in the claims refers to the speed or accuracy with which the steps must be performed.

PO also argues that “*Arai*’s lack of advanced contextual analysis significantly limits its ability to be effectively used with more than one language.” POR, 26; see

² Moreover, the ’428 patent uses permissive language for “context” or “contextual analysis,” confirming that contextual analysis is optional. See, e.g., ’428Pat, 3:2-4 (“The system **can** automatically decide ... by analyzing the context...”), 6:62-65 (“The recognition **may** select the candidate sequences 322 from one or more dictionaries contained therein based on, **for example**, user history **and/or** character context.”), 9:42-49 (describing a display “based on, **for example**, linguistic and contextual cues”), 12:31-34.

also id., 28 (making similar argument for *Fenwick*). Again, however, nothing in the claims requires that the method be able to be used with more than one language.³

PO criticizes *Fenwick* because its process uses “**multiple** memory buffers,” whereas “the ’428 patent’s process [] utilizes a **single** intermediary memory buffer.” POR, 27 (emphases in original). But the claims recite “**a** memory storage buffer” (claim 1) or “**a** memory of the mobile device” (claim 9). It is well-established that “a” in an open-ended claim means “one or more” absent clear intent otherwise. *E.g.*, *KCJ Corp. v. Kinetic Concepts, Inc.*, 223 F.3d 1351, 1356 (Fed. Cir. 2000). Neither the ’428 patent’s figure 2 cited by Dr. Koskinen (*Koskinen* ¶87), col. 12, lines 31-50 of the ’428 patent cited by PO (POR, 27), nor anything else in the intrinsic record provides support for deviating from this general rule. PO also argues that a single buffer is needed “so that the process can then use the contents of that single memory buffer for contextual analysis to predict what words or phrases the user may be attempting to enter.” *Id.* As noted above, however, nothing in the claims requires contextual analysis, nor “predict[ing] what words or phrases the user may be attempting to enter.” *Id.*

³ Claims 7, 8, and 13 refer to Chinese, Japanese, or Korean in the *alternative*—so just one satisfies the claims.

Thus, *Arai* and *Fenwick* are analogous to the '428 patent and none of PO's alleged distinctions are legally cognizable. Moreover, as the Petition explained (and further discussed below), *Arai-Fenwick* renders obvious *every claim limitation*.

B. *Arai* discloses or suggests the “generating a first candidate sequence” of limitation 1[d].

As the Petition explains, *Arai* discloses or suggests this limitation by generating 工揚 from two recognized sequences 工 and 揚 (from inputs 工 and 揚). Petition, 21-22.

PO accuses Petitioners of relying on the same disclosure in *Arai* for both 1[b] and 1[d]. According to PO, the Petition maps 1[b] to *Arai*'s evaluation and recognition of *two* sample characters entered by the user, i.e., the characters 工 and 揚. POR, 34. Thus, according to PO, by the time the Petition discusses 1[d], both individual characters, 工 and 揚, have already been evaluated and cannot be used again with respect to 1[d]. *Id.*, 35-36.

PO misrepresents the Petition. Limitation 1[b] requires determining only one recognized sequence (“a first recognized sequence”). '428*Pat*, 20:15-18. Although the Petition describes how *Arai* recognizes both 工 and 揚 from the respective inputs

工 and 場 (Petition, 17-19), it maps 1[b] only to *Arai*'s determination of the recognized sequence 工 from the input 工. *See id.*, 19.⁴

Moreover, PO argues that the portions of *Arai* relied upon by the Petition do not disclose or suggest 1[d], but its arguments are based on an incorrect understanding of what is required by “generating” in 1[d]. Despite arguing plain and ordinary meaning for the claims, PO argues that “generating a first candidate sequence, wherein the first candidate sequence is a best match of one or more recognized sequences” (1[d]) should be construed to “require[] an ***additional processing*** step (beyond the initial individual character recognition process step), i.e., processing of the ***combination of characters*** stored in memory to generate the ***hypothetical ‘candidate sequence.’***” POR, 36 (emphasis altered). The record supports no such construction.

PO's understanding of the “generating” step is wrong for at least three reasons. ***First***, there is no basis for construing generating to require “additional processing.” As the Petition explains, *Arai* discloses or suggests determining 工場 as a sequence (“generating a first candidate sequence”) wherein the sequence

⁴ Similarly, the Petition maps 1[c] only to storing of 工 in RAM. *See* Petition, 21.

comprises the two recognized sequences 工 and 揚, in which each had the highest evaluation values for the inputs 工 and 場, respectively (“wherein the first candidate sequence is a best match of one or more recognized sequences”).⁵ Petition, 21-22. This additional step by *Arai* of determining 工揚 from the two recognized sequences 工 and 揚 (*Arai* ¶¶[0150]-[0151]) meets the plain and ordinary meaning of “generating.” Moreover, to the extent that the Board accepts that “generating” requires “additional processing,” *Arai*’s disclosure of combining two separate recognized sequences (工 and 揚) into a single candidate sequence (工揚) is additional processing. Notably, while the recognition of 工 from input 工 was mapped to 1[b], the recognition of 揚 from 場, and the generating of 工揚 from inputs 工 and 場, was

⁵ PO misunderstands *Arai*’s disclosure, because it (and its expert) on multiple occasions confuse/reverse the second input (場) with the second recognized sequence (揚). See POR, 36, 38, 39; *Koskinen* ¶¶103, 106. By reversing how the Petition accounts for and maps these different characters in *Arai*’s disclosure to the claims, PO’s entire analysis as to limitations 1[d]-1[h] is based on an incorrect representation of Petitioners’ arguments.

not mapped to 1[b]. Thus, the Petition indisputably does not map to 1[b] and 1[d] the same aspects of *Arai*'s operation.

Second, there is no basis in the claim or intrinsic record for requiring that such “additional processing”—to the extent the claim even requires it—must be a “combination of characters stored in memory.” POR, 36. The claim does not refer to “combination of characters.” It refers to one or more recognized sequences, which for the reasons discussed in the Petition (and here) are 工 and 揚. Moreover, the claim requires writing only the first recognized sequence to memory (1[c]) and does not require any additional sequences be written to memory, but regardless each of 工 and 揚 are stored in memory. Petition, 20-21; *Arai* ¶[0142].

Finally, nothing in 1[d] refers to or requires a “hypothetical” candidate sequence. Elsewhere in its POR, PO explains that by “hypothetical character candidate sequence” it means “predict[ing] what the user may be trying to enter.” POR, 27. But the claims do not require “hypothetical” candidate sequences or a user’s subjective intent.⁶

⁶ Dr. Koskinen also agrees the claims do not require “contextual or predictive information.” *Koskinen Depo.*, 164:20-165:4.

PO incorrectly suggests that Petitioners' expert Mr. Ward supports PO's incorrect understanding of "generating" in 1[d] by mischaracterizing his testimony. POR, 37-38. Mr. Ward was clear, however, that the portions of testimony to which PO cites were directed to specific embodiment(s) discussed in the specification, not requirements of the claim. *See Ward Depo.*, 125:1-127:12 (testifying that PO's line of questioning is directed to "a particular illustration and use case"). When PO attempted during the deposition to draw a conclusion from this "use case" and to apply it to the "generating a first candidate sequence" limitation, Mr. Ward flatly rejected it. *Ward Depo.*, 127:14-128:4 (testifying "I don't see where that's required in the claims.... The claims don't require all the behavior that you're describing in this particular illustration and this particular use case.").

C. *Arai* discloses or suggests the "presenting" and "edit[ing]" of limitation 1[e].

PO does not dispute that *Arai* discloses or suggests displaying 工揚 ("presenting the first candidate sequence") to the user. PO disputes only whether *Arai* "allow[s] the user to edit" 工揚 before performing post-processing on 工揚. POR, 38-39. This argument rests on a myopic reading of *Arai* in which PO focuses on how

Arai's first embodiment operates using a "time series" example, while ignoring everything else that *Arai* teaches about that very same first embodiment.⁷ *Id.*

While *Arai* discloses that editing can occur after post-processing, it indisputably discloses or suggests that it can *also* occur before post-processing. More particularly, as noted in the Petition, *Arai* discloses "a text editing processing unit [32], which executes editing processes on a text character string ***obtained from the handwritten character recognition unit 35***, such as deletion, kana-kanji conversion, insertion into a character input area of an application, and the like." *Arai* ¶[0051]; Petition, 22-23; *see also Arai* ¶¶[0086], [0088]-[0090] (providing examples of how characters in the "input character buffer area 61" are editable). *Arai* performs character recognition ***before*** post-processing.⁸ *Arai* ¶¶[0142]-[0143], Fig. 8; Petition, 18-19; POR, 11, 32-33.

⁷ PO again twice incorrectly states 工場 is displayed before post-processing occurs (POR, 38, 39), even though both *Arai* and the Petition state that 工場 is actually displayed (Petition, 22; *Arai* ¶[0151]).

⁸ PO also cites to Mr. Ward's testimony that *Arai* allows for editing *after* post-processing (POR, 39), but ignores that Mr. Ward also testified that editing may also occur before post-processing. *See Ward Depo.*, 213:11-24.

PO criticizes the Petition for citing to “disclosures in other parts of *Arai*” regarding editing, but *Arai* has only two embodiments, and *Arai*’s disclosures to which the Petition cites—including how *Arai* permits a user to edit the text character string obtained from the handwritten character recognition unit 35—*all* relates to the first embodiment. *See generally Arai*. PO fails to explain how “editing” in *Arai*’s first embodiment would somehow change for examples used within that embodiment, because it would not. For example, *Arai* allows a user to delete a character “displayed in the input character buffer area 61” using the “Backspace key button,” without any qualifications whether those characters had to first go through post-processing or not. *Arai* ¶[0089]; *Ward* ¶123.

As the Petition explains, the first candidate sequence 工揚 is displayed in the input character buffer area prior to post-processing, and the user may edit it before post-processing occurs. Petition, 22-23; *Ward* ¶¶120-124.

D. *Arai* discloses or suggests the “identifying at least a first sequence portion of the first candidate sequence wherein the identifying is at least partially based on one or more rules or dictionaries of words accessible to the mobile device” of limitation 1[f].

As explained in the Petition, *Arai* discloses or suggests 1[f] by changing the first candidate sequence 工揚 to 工場 through post-processing, wherein 工 is in both the sequence before and after post-processing and, therefore, 工 is at least a first sequence portion of the first candidate sequence. Petition, 23-26.

1. “identifying at least a first sequence portion of the first candidate sequence”

PO incorrectly argues that *Arai*’s post-processing satisfies 1[d], and therefore that same processing cannot disclose 1[f]. As explained in §III.B, that is incorrect because 1[d] is met by *Arai*’s disclosure before post-processing occurs. Limitation 1[f] is satisfied by *Arai*’s disclosure regarding its post-processing operations. *Id.*; *Ward* ¶¶125-130.

PO erroneously argues that *Arai* has no disclosures “identifying any ‘portions’ of the candidate character sequence.” POR, 41. **First**, this argument misses the mark because claim 1 does not require a “portion,” but rather “at least a first sequence portion of the first candidate sequence,” which means any portion/part, including the entire first candidate sequence. *See also Koskinen Depo.*, 161:19-162:9 (Koskinen testifying that the claim “says you have to go through a step of identifying a portion, and that portion could be some set of the characters or the entire thing.”). However, the point is moot, because *Arai* discloses a first candidate sequence comprising two Japanese characters (工 揚) that through post-processing becomes

(工場), in which at least a first sequence portion of the first candidate sequence (工) is identified as correct through the post-processing.⁹

PO incorrectly asserts Petitioners argued that “the mere generation of the candidate sequence of limitation 1[d] *automatically* satisfied the separate processing step of limitation 1[f]” making 1[f] superfluous. POR, 42 (emphasis in original). But that is not Petitioners’ argument. *Arai* contemplates circumstances in which no part of the first candidate sequence generated during 1[d] would be identified in 1[f]. For example, if after post-processing, both characters were different, which according to *Arai* is possible (see *Arai* ¶[0146] (identifying six possible combinations)), then, in that scenario, *Arai* would not have performed the aspect of 1[f] that requires identifying “at least a first sequence portion.” Petitioners rely on a disclosure of *Arai* that *does* perform 1[f].

⁹ To the extent PO means this limitation requires a sub-portion of 工, it failed to provide any support for that argument and has waived it. The ’428 patent’s embodiments contemplate individual letters or Japanese characters as the “portion.” See ’428Pat, 9:7-12, Figures 3-5.

2. “wherein the identifying is at least partially based on one or more rules or dictionaries of words accessible to the mobile device”

PO argues that “Petitioners do not identify *any* disclosure in *Arai* of said portion being identified ‘at least partially based on one or more rules or dictionaries of words.’” POR, 42 (emphasis in original). This is incorrect. As stated above, the identifying occurs during post-processing. *Arai*’s post-processing uses a dictionary. Petition, 24; *Arai* ¶[0146]; *Ward* ¶129. *Arai*’s system is on a mobile device. Petition, 12-13; *Arai* ¶[0022]. *Arai*, therefore, discloses or suggests this feature.

E. *Arai-Fenwick* discloses or suggests “removing the first sequence portion from the memory storage buffer” in the absence of user input as recited in 1[g].

Arai in combination with *Fenwick* discloses or suggests this limitation by incorporating *Fenwick*’s teachings into *Arai*. Petition, 26-34; *Ward* ¶¶131-144.

PO does not dispute that *Fenwick* discloses this limitation (*e.g.*, POR, 26, 45), but instead argues a POSITA would not have been motivated to combine *Arai* and *Fenwick* because: (i) they represent different character/pattern recognition systems for different languages, (ii) their character recognition and post-processing algorithms for different languages are substantially different, and (iii) the Petition fails to provide a motivation to combine applicable to 1[g]. POR, 44-58. PO is wrong on all points.

1. *Arai's and Fenwick's teachings are combinable.*

According to PO, “a POSITA would not have been motivated to combine [*Fenwick's*] algorithm for fixing spacing errors between words with [*Arai's*] algorithm designed to recognize characters and words in a language which does not utilize spaces between words.” POR, 45. This argument is wrong for three reasons.

First, PO incorrectly characterizes *Fenwick* as merely directed to a “spacing correction algorithm.” *See, e.g.*, POR, 2, 19, 26, 56. *Fenwick* describes its invention, however, as relating “to a pattern recognition system for recognizing known patterns or groups of pattern.” *Fenwick*, 1:7-9. For sure, *Fenwick's* process allows for correcting spacing errors between characters, but it does so by determining where words end and other words begin. *Fenwick*, 2:45-63 (“A pattern recognition system of the preferred embodiment of the present invention recognizes words and determines where to place spaces between those words...”), 5:52-57, 6:9-17, 6:21-28, Figs. 4, 5a, 5b. This is similar to the '428 patent, which is directed to identifying “the end of one word and the beginning of the next without the need to detect a space gesture between two words.” '428*Pat*, 2:59-62. *Arai*, too, is concerned with solving the problem of recognizing the “break between words.” *Arai* ¶¶[0004], [0006] (conventional character recognition devices “cannot recognize breaks between

words.... The present invention was created to solve the problem set forth above.”).

Thus, all three are directed to the same or related subject matter.

Second, PO argues *Fenwick* is not applicable to *Arai* because each is allegedly directed to a different language and because Japanese is “a language which does not utilize spaces between words.” POR, 45. To the extent that PO means to suggest that the Japanese language has no breaks that would indicate to a reader where one word/character ends and the next begins (which is after all, the function that spaces serve in English), that is incorrect both as a matter of logic and refuted by *Arai* itself. *Arai* ¶¶[0004], [0006] (*Arai* is directed to the problem of recognizing breaks between words). Moreover, *Fenwick* itself refutes PO’s suggestion that it has no relevance to Japanese handwriting recognition inasmuch as it discusses a Japanese patent publication in its “Description of the Prior Art” section.¹⁰ *Fenwick*, 1:59-2:23.

Finally, PO argues *Fenwick*’s algorithm cannot be combined with *Arai*’s algorithm. POR, 45. But, as discussed next, bodily incorporation of references is not the test.

¹⁰ It matters not that *Fenwick* distinguishes itself from this Japanese reference. At bottom, *Fenwick* considered Japanese prior art to be worth discussing.

2. A POSITA would have found it obvious to combine *Arai*'s and *Fenwick*'s teachings.

According to PO, there would be no motivation to combine the purported algorithms of *Arai* and *Fenwick* because the references are directed to different languages. POR, 45. But bodily incorporation of two references' embodiments—*Arai*'s and *Fenwick*'s purported algorithms—is the incorrect test for obviousness. *MCM Portfolio LLC v. Hewlett-Packard Co.*, 812 F.3d 1284, 1294 (Fed. Cir. 2015) (“[T]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.... Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.”) (quotations omitted); *ClassCo, Inc. v. Apple, Inc.*, 838 F.3d 1214, 1219 (Fed. Cir. 2016) (“The rationale of *KSR* does not support [PO's] theory that a person of ordinary skill can only perform combinations of a puzzle element A with a perfectly fitting puzzle element B.”). As the Petition explained, a POSITA would have found it obvious to combine *Arai*'s and *Fenwick*'s teachings. Petition, 26-34.

Not only is PO's focus on whether algorithms are combinable incorrect, but PO is also wrong that the specific algorithms that Mr. Andersson and Dr. Koskinen discuss—i.e., single character recognition (SCR) and multiple character recognition (MCR)—are relevant to the claim language. Neither Mr. Andersson nor Dr.

Koskinen analyzed the claims to determine whether any portion of the claim language pertains to SCR/MCR. *Andersson Depo.*, 55:5-56:20 (no patent claim analysis for SCR/MCR), 57:15-58:16 (admitting no “analysis”), 106:3-17 (admitting not “comfortable testifying about the scope of the ’428 patent claims or what they cover”); *Koskinen Depo.*, 150:20-151:13 (no analysis conducted between claims and SCR/MCR). PO’s reliance on the *Handwriting Recognition* and *Multi-Language Online Handwriting Recognition* articles (POR 46-47) is likewise misplaced for the same reason that alleged difficulties with bodily incorporation are not determinative of obviousness. *MCM Portfolio*, 812 F.3d at 1294; *ClassCo*, 838 F.3d at 1219.

PO also cites to Mr. Andersson’s testimony that “based on his experience, ‘these challenges [with SCR, MCR and combining algorithms for different languages] existed as of October 15, 2012.’” POR, 51. The Board should ignore this testimony because, other than noting that he has been working at Cerence or its predecessors since 2001 (EX2009 ¶3), Mr. Andersson provides no information evidencing he is a POSITA or an expert in the field qualified to provide opinions regarding a POSITA’s knowledge.¹¹ Similarly, Dr. Koskinen’s “opinions” on these

¹¹ Petitioners lodged an objection to Mr. Andersson’s declaration and may move to strike.

so-called challenges should be disregarded because he has no experience relevant to a POSITA (*see supra* §II), and his declaration merely quotes the Andersson declaration (*see Koskinen* ¶¶139-147). Additionally, nothing in the record requires the claims perform SCR/MCR in the manner Mr. Andersson and Dr. Koskinen discussed. *See supra*; *see also Allergan, Inc. v. Sandoz Inc.*, 726 F.3d 1286, 1292 (Fed. Cir. 2013) (“[A POSITA] need only have a reasonable expectation of success of developing the claimed invention.”).

PO also cites to Mr. Ward’s deposition testimony regarding possible challenges in combining specific handwriting recognition *algorithms* directed to different languages. POR, 22, 51-55. But this testimony was in response to general questions that were neither tied to any specific claim language nor to whether it would have been obvious to a POSITA to combine *Arai*’s and *Fenwick*’s teachings. In any event, Mr. Ward (undisputed POSITA)—knowing the alleged challenges of handwriting recognition—still opined a POSITA would have been motivated to combine *Arai* and *Fenwick* and would have had a reasonable expectation of success. *Ward* ¶¶131-144.

PO also ignores that the ’428 patent takes for granted the alleged challenges with combining algorithms for different languages or performing handwriting recognition for multiple languages by not including a discussion of such challenges.

Google LLC, et al. v. Cywee Grp. Ltd., IPR2018-01258, Paper 90 at 38-39 (PTAB Jan. 9, 2020) (omission of detail related to required circuitry and software in the challenged patent “acts as an admission” that such details were known) (citing *In re Epstein*, 32 F.3d 1559, 1568 (Fed. Cir. 1994))).

3. A POSITA would have been motivated to combine *Arai* and *Fenwick* as it relates to 1[g].

PO argues the Petition fails to provide a motivation to combine *Arai* and *Fenwick* as to 1[g] by selectively quoting the Petition out of context. POR, 57-58. As noted in the Petition, *Arai* is silent on when results would be deleted from RAM, and so a POSITA would have looked to other sources. Petition, 26; *Ward* ¶¶132-133. Further, *Arai* states that conventional handwritten character recognition techniques may be used, and *Fenwick* is one such conventional technique. *Id.* Moreover, *Fenwick*’s functionality of automatically sending words to an application and deleting that word from memory when doing so are interrelated. Petition, 27-30; *Ward* ¶¶133-138.

It would have been obvious to incorporate these interrelated teachings from *Fenwick* into *Arai*. See, e.g., Petition, 30-31; *Ward* ¶139. The Petition also explains why a POSITA would have found it obvious to do so: because it would have “amount[ed] to applying a known technique (*Fenwick*’s recognition of words without additional user confirmation *and deletion of words from the buffer when*

no longer needed—e.g., when the recognition results are sent to an application) to a known method (*Arai*’s method of performing handwriting recognition which also uses temporary memory for storing handwritten character recognition results) ready for improvement to yield predictable results (the *Arai-Fenwick* combination in which recognition results are sent to an application without further user confirmation—e.g., pressing the Enter Key—*and handwritten character recognition results are removed from the temporary memory such as RAM* when the recognition results are sent to the application).” *Ward* ¶114.

F. *Arai-Fenwick* discloses or suggests “sending the first sequence portion to an application running on the mobile device” as recited in limitation 1[h].

PO asserts (without explanation) the Petition fails to demonstrate *Arai-Fenwick* meets 1[h]. POR, 30, 40, 44. The POR groups 1[g] and 1[h] together and at most appears to argue 1[h] is not met because 1[g] is not met. But Petitioners demonstrated *Arai-Fenwick* renders obvious 1[g] and provided motivation to combine for both 1[g] and 1[h]. *See supra* §III.E; Petition, 26-34; *Ward* ¶¶131-144. Moreover, the Petition explains 1[h] is met because *Arai-Fenwick* discloses or suggests sending the sequence 工場 to an electronic mail application (“sending the first sequence portion to an application”) that runs on a mobile information device (“running on a mobile device”) (*see* Petition, 34), which remains unrebutted by PO.

G. *Arai-Fenwick* discloses or suggests claim 3, requiring a “second candidate sequence based on the first user input.”

As the Petition explained, *Arai* meets claim 3 by disclosing “when the user selects, through tapping, an arbitrary character within the input character buffer area 61, a group of the first through fourth candidates for that character will be displayed, in the rank order of the candidates, in the candidate display area 66.” *Arai* ¶[0086]; Petition, 36-37; *Ward* ¶¶152-156.

PO does not dispute Petitioners’ explanation of what *Arai* discloses or suggests. *See* POR, 60. Rather, PO argues *Arai*’s disclosure does not meet the claim because it is “not a list of hypothetical candidate character sequences (i.e., potential words or strings of characters the user may be trying to enter.” *Id.* But PO failed to propose such a construction, much less explain why the claim must be construed this way. Certainly the plain language of the claim does not recite anything about the candidate sequence being “hypothetical” or a “character sequence,” much less that it be “potential words or strings of characters the user may be trying to enter.” Moreover, the candidate list from *Arai*’s candidate display area 66, contrary to PO’s argument, absolutely may be “potential words” or characters the user is trying to enter, especially given that *Arai* is directed to recognizing Kanji, which are “analogous to a word.” *See Kleeck*, 1:23-25 (“As such, each Kanji character is a

higher order linguistic symbol that is analogous to a word in the English language.”).¹²

Nor is there anything in claim 3 requiring the “second candidate sequence” to be related to the “first candidate sequence” in claim 1. In claim 1, the “first candidate sequence” must be the “best match of one or more recognized sequences.” *’428Pat*, Claim 1. In claim 3, the “second candidate sequence,” need not be related to any recognized sequences; its only requirement is that it is “based on the first user input” from claim 1. *Id.* Claim 3. *Arai*’s disclosure of rank-ordered recognition results for 工 meets claim 3’s only requirement for “second candidate sequence”—that it be based on the first user input. Petition, 36-37; *Ward* ¶¶152-156.

H. *Arai-Fenwick* discloses or suggests claim 9.

PO argues that 9[c] parallels 1[d] and simply refers back to its argument with respect to 1[d], namely that the Petition allegedly identifies the wrong disclosure in *Arai* with respect to 1[d] and 9[c]. POR, 63. PO’s arguments with respect to 9[c] fail for the same reasons as explained above with respect to 1[d]. *See supra* §III.B; Petition, 21-22, 41-42; *Ward* ¶¶117-119, 172.

¹² To be clear, *Kleeck* is cited as evidence of a POSITA’s knowledge; it is not part of Ground 1.

As to 9[e], PO argues it is parallel to 1[f], and repeats the same arguments as with 1[f], including that *Arai* allegedly discloses “only determining whether a full character string appears in the dictionary lookup, not whether any sub-portions of any character string matches any database or dictionary.” POR, 63-64. These arguments fail for the same reasons already discussed with respect to 1[f]. *See supra* §III.D; Petition, 42-45; *Ward* ¶¶174-182.

PO also argues that *Arai*’s dictionary fails to disclose or suggest this claim because claim 1 recites “dictionary” whereas claim 9 recites “database of acceptable words and/or phrases” and, therefore, these terms must differ under the doctrine of claim differentiation. POR, 64-65. PO misunderstands the doctrine. Just because two terms may have different scopes does not mean *Arai*’s dictionary cannot meet both claim terms. *See Seachange Int’l, Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1369 (Fed. Cir. 2005) (“[C]laims that are written in different words may ultimately cover substantially the same subject matter.”) (cleaned up). Here, a POSITA would have understood *Arai*’s computer-implemented dictionary to encompass a database of acceptable words. *See Ward* ¶¶180-182 (discussing *Baker*). As such, *Arai*’s disclosure meets both “one or more... dictionaries of words” in 1[f] and “database of acceptable words and/or phrases” in 9[e].

As to limitation 9[f], PO argues it is parallel to 1[g] and 1[h]. POR, 65-66. PO's arguments, therefore, fail for the same reasons already discussed for 1[g] and 1[h]. *See supra* §§III.E, III.F; Petition 45-47; *Ward* ¶¶183-187.

I. PO raises no independent arguments as to claims 2, 7-8, 12-13.

PO did not challenge the remaining claims in Ground 1 apart from the arguments addressed above and, therefore, waived such additional arguments. Paper 10, at 9 (“any arguments not raised in the response may be deemed waived”). Thus, Petitioners submit they have carried their burden with respect to those claims.

IV. GROUND 2: *ARAI* IN COMBINATION WITH *FENWICK* AND *BAKER* RENDERS CLAIMS 9, 12-13 OBVIOUS

PO argues *Baker* cannot be combined with *Arai-Fenwick* because of differences in processing related to different languages. POR, 67-68. This argument fails for the same reasons discussed *supra* §III.E.2. Moreover, as the Petition explains, *Arai* already teaches using a dictionary, and it would have been obvious to incorporate *Baker*'s ***teaching*** that a dictionary can be implemented as a database into *Arai-Fenwick*. Petition, 48-49; *Ward* ¶¶191-199.

Nor is Petitioners' motivation to combine conclusory, as PO alleged. POR, 68-69. The Petition explains why *Baker*'s technology is similar to *Arai-Fenwick*. Petition, 49; *Ward* ¶¶192-195. It also explain that *Arai* discloses use of a dictionary without disclosing how it is stored/implemented, and that a POSITA would have

looked for references such as *Baker* for implementation details. Petition, 50; *Ward* ¶196. Mr. Ward also opined that a POSITA would have found the combination obvious because it would have amounted to applying a known technique (*Baker*'s use of a database to store/implement a dictionary) to a known device (the *Arai-Fenwick* combination that uses a dictionary to calculate chain probabilities in post-processing) ready for improvement to yield predictable results (the *Arai-Fenwick-Baker* combination in which the dictionary is stored/implemented in a database). Petition, 50; *Ward* ¶197.

V. CONCLUSION

The Board should find the Challenged Claims unpatentable and cancel them.

Date: August 8, 2025

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

The undersigned hereby certifies that the foregoing Petitioners' Reply to Patent Owner's Response contains 5,495 words, excluding those portions identified in 37 C.F.R. §42.24(c), as measured by the word-processing system used to prepare this paper.

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CERTIFICATE OF SERVICE

I certify that on August 8, 2025, I caused a true and correct copy of the foregoing Petitioners' Reply to Patent Owner's Response to be served on the Patent Owner via electronic mail to Patent Owner's counsel of record below:

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