

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

K.MIZRA LLC,
Patent Owner.

Case No. IPR2026-00304
Patent 8,438,120

PATENT OWNER'S PRELIMINARY RESPONSE

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PATENT OWNER'S EXHIBIT LIST

Exhibit No.	Description
2001	Plaintiff Google LLC's Complaint for Declaratory Judgment of Non-Infringement of U.S. Patent No. 8,144,717 and U.S. Patent No. 8,438,120, <i>Google LLC v. K.Mizra LLC</i> , Case No. 3:25-cv-08107-JCS (N.D. Cal. Sept. 24, 2025, ECF No. 1)
2002	America Invents Act, H.R. 112-98, 112th Cong. (2011)
2003	Questions for the Parties, <i>Google LLC v. K.Mizra LLC</i> , Case No. 3:25-cv-08107-JCS (N.D. Cal. Mar. 19, 2026, ECF No. 40)
2004	Plaintiff Google LLC's Notice of Voluntary Dismissal, <i>Google LLC v. K.Mizra LLC</i> , Case No. 3:25-cv-08107-JCS (N.D. Cal. Mar. 27, 2026, ECF No. 46)
2005	Transcript from March 24, 2026 Hearing on Defendant K.Mizra LLC's Plaintiff Google LLC's Motion to Dismiss, <i>Google LLC v. K.Mizra LLC</i> , Case No. 3:25-cv-08107-JCS (N.D. Cal. Mar. 24, 2026)
2006	Plaintiff K.Mizra LLC's Complaint for Patent Infringement, <i>K.Mizra LLC v. Google LLC</i> , Case No. 1:26-cv-00754 (W.D. Tex. Mar. 27, 2026, ECF No. 1)
2007	Plaintiff K.Mizra LLC's Complaint for Patent Infringement, <i>K.Mizra LLC v. Amazon.Com, Inc. et al.</i> , Case No. 1:26-cv-00316 (W.D. Tex. Feb. 10, 2026, ECF No. 1)
2008	Patent and Trademark Office, Interim Director Discretionary Process, https://www.uspto.gov/patents/ptab/interim-directordiscretionary-process , Oct. 3, 2025
2009	Patent and Trademark Office, Notice of Proposed Rulemaking - Revision to Rules of Practice before the Patent Trial and Appeal Board, https://federalregister.gov/d/2025-19580 , Oct. 17, 2025
2010	Scheduling Order, <i>K.Mizra LLC v. Google LLC</i> , Case No. 1:25- cv-00236 (W.D. Tex. June 17, 2025, ECF No. 39)
2011	Patent and Trademark Office, Additional Discretionary Institution Considerations – U.S. Manufacturing and Small Business Use of AIA Proceedings, https://www.uspto.gov/patents/ptab/interimdirector-discretionary-process , Mar. 11, 2026
2012	Google Cloud Documentation, TPU Architecture
2013	Collection of Documents Indicating TPUs Manufactured in Taiwan

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2014	Alphabet Inc. (Google), Annual Report (Form 10-K) (Dec. 31, 2025)
2015	Collection of Documents Regarding Google's Overseas Manufacturing Activities
2016	Collection of Documents Regarding Google's Offshoring of American Jobs

Pursuant to 37 C.F.R. § 42.107, Patent Owner K.Mizra LLC (“K.Mizra” or “Patent Owner”) files this preliminary response to the Petition, setting forth reasons why the Petition for *inter partes* review of claims 1-16 of U.S. Patent 8,438,120 (the “’120 patent”), as requested by Google LLC (“Petitioner”), should be denied.

I. INTRODUCTION

The ’120 patent is directed to an iterative method in a machine learning system that uses a best-performing hyperparameter vector across present and previous analysis iterations to update an estimate of a target hyperparameter vector. In each pass or iteration, the method selects the hyperparameter vector producing the best result from all current and prior iterations and uses that vector to update the estimate of the target hyperparameter vector for that iteration. These features appear in challenged claim 1 at least at elements [1.3] and [1.4], which recite “selecting, from the random sample of hyperparameter vectors, a hyperparameter vector producing a best result in the present and any previous iterations, and wherein the step of updating the estimate of the target hyperparameter vector uses said hyperparameter vector producing the best result.”

Petitioner’s Ground 1 based on Watanabe or Watanabe and Fredrichs fails to show at least these aspects of the claims. Watanabe does not disclose element [1.3], which requires a per-iteration selection of a randomly-sampled

hyperparameter vector producing the best result in the present and any previous iterations. Petitioner barely disputes this critical point. Rather than mapping any Watanabe passage to [1.3], the Petition invokes Shaefer, which is a reference not included in any Ground, as evidence of what was “well-known,” and then frames its [1.3] argument as a concession: “[e]ven if Watanabe’s recombination operation is somehow found to not expressly satisfy” [1.3], elitism would have been obvious. Pet., 45. Watanabe, however, confirms that the “recombination” process Petitioner relies on does not use elitism, noting an option to *add* an “elite strategy” to Watanabe’s 23 other embodiments. Watanabe, 67:26-34. But even that optional strategy in Watanabe is performed to preserve best vectors for *subsequent iterations*, *not* to update an estimate of a target vector in a *current iteration* in the manner required by the challenged claims.

Confirming this point, the Petition does not rely on Watanabe’s “elite strategy” to satisfy element [1.4] of claim 1. The Petition’s entire analysis of element [1.4] is barely more than an incorporation by reference to its discussions of other claim elements. The Petition identifies no mechanism in Watanabe through which a selected best-result vector enters the update computation, because none exists. These deficiencies pervade all three Grounds, and the Board should deny the Petition on the merits.

II. BACKGROUND OF THE '120 PATENT

A. Overview

The '120 patent, entitled “Machine Learning Hyperparameter Estimation,” is directed to determining hyperparameters of a classifier in a machine learning system. '120 patent, 1:6-10. The invention addresses the problem of determining optimal hyperparameters that control a classification process, such as threshold values and decision criteria, in machine learning classifiers. According to the '120 patent, determining optimal hyperparameters traditionally posed challenges when hyperparameters occupy an extremely large search space, and where the optimal solution is a rare event. '120 patent, 1:12-59.

The '120 patent improves searching for hyperparameters by adding a “best performance preservation feature” to a cross-entropy-like method. '120 patent, 6:61-64. In each iteration, the method of the '120 patent evaluates the results of a random sample of hyperparameter vectors. If one of those hyperparameter vectors produces a result better than any of the other hyperparameters in the current iteration and a historical best result from previous iterations (“a best result in the present and any previous iterations”), that hyperparameter is “selected.” The “selected” hyperparameter vector is used to update an estimate for a “target hyperparameter vector.” For example, as reflected in column 5, lines 39-59 of the '120 patent, a weighting function dependent on the best hyperparameter vector

may be used to set the weight of the hyperparameter vectors in the current random sample. The iteration loop completes when a stopping condition is met. This approach can reinforce better results and achieve more efficient convergence, while overcoming discontinuity problems associated with hyperparameters. '120 patent, 6:18-22.

More particularly, FIG. 1 of the '120 patent shows the classifier (C) 1 receiving hyperparameters (HP) and feature data (FD) and producing classification data (CD):

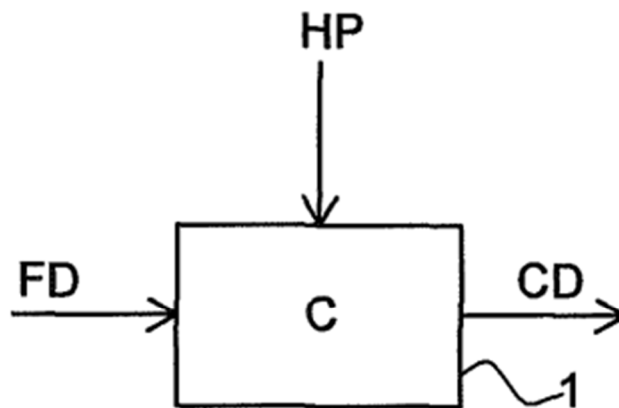


FIG. 1

The classifier (C) 1 receives feature data (FD), such as image data, and hyperparameters (HP), and produces classification data (CD). '120 patent, 4:29-60.

As shown in FIG. 2 and FIG. 3, a device 2 (H) for determining hyperparameters receives parameters (P) as input, and outputs hyperparameters

(HP) for the classifier. '120 patent, 6:46-60. Stored instructions allow the processor to carry out the method according to the invention. '120 patent, 6:51-53.

The method iteratively produces an estimate of a target hyperparameter vector. '120 patent, 5:60-6:17. Each iteration: (1) draws a random sample of hyperparameter vectors from a set of possible hyperparameter vectors; (2) selects from that random sample the hyperparameter vector producing the best result in the present and any previous iterations (the “elitist” vector E^t); and (3) updates the estimate of the target hyperparameter vector using the selected best-result vector. For example, the update step may use a weighting function $W(X_i^t; E^t)$ that gives greater weight to samples closer (by Euclidean distance) to the elitist vector E^t . '120 patent, 3:11-28; 5:39-59. When the Euclidean distance between a sample and the best sample is zero, the weighting function equals one. '120 patent, 5:58-59.

By preserving the best-performing hyperparameter vector across all previous and present iterations, and using the selected hyperparameter vector to update the estimate of the target hyperparameter vector in the present iteration, the properties of the best performing hyperparameters may be used to guide the next iteration and converge on a target hyperparameter vector even when the hyperparameters are not continuous and their effects are not transparent. '120 patent, 2:21-32.

B. The Challenged Claims

Petitioner challenges independent claim 1. Independent claims 12 (a classifier), 13 (a non-transitory computer readable medium), and 14 (a device) contain similar recitations as highlighted below concerning claim 1.

Claim 1 of the '120 patent recites:

1. [Preamble¹] A method of determining hyperparameters of a classifier in a machine learning system by iteratively producing *an estimate of a target hyperparameter vector*, each iteration comprising the steps of:

- [1.1] drawing a random sample of hyperparameter vectors from a set of possible hyperparameter vectors,
- [1.2] updating the estimate of the target hyperparameter vector by using the random sample, and
- [1.3] *selecting, from the random sample of hyperparameter vectors, a hyperparameter vector producing a best result in the present and any previous iterations*, and [1.4] *wherein the step of updating the estimate of the target hyperparameter vector uses said hyperparameter vector producing the best result.*

'120 patent, claim 1 (emphasis added).

¹ The bracketed annotations correspond to the Petition's designations.

III. CLAIM CONSTRUCTION

As noted in Patent Owner's Request for Discretionary Denial at 6-10, Petitioner actively avoided setting forth any position on how the claims of the '120 patent should be construed. Instead, the Petition declares that it interprets the claims "in accordance with the ordinary and customary meaning ... as understood by one of ordinary skill in the art." Pet., 22. Petitioner does not propose any express constructions for specific terms.

Patent Owner respectfully submits that proper claim construction underlies any validity determination, and submits its analysis of the claim language as applied to the challenged claims and disclosures in the references used in Section IV below, without waiving its right to submit supplemental positions concerning claim construction in a Patent Owner Response. In failing to properly interpret the independent claims, the Petition fails.

In particular, as will be addressed below in Section IV, the correct understanding of each independent claim requires producing an estimated hyperparameter vector through an iterative process that selects, from a random sample of hyperparameter vectors, a hyperparameter vector producing "a best result in the present and any previous iterations" and updating the estimate of the target hyperparameter vector using the hyperparameter vector producing the best result. At least this feature is absent from Watanabe and the other references used

in the Petition. Thus, Patent Owner submits that the Board need not engage in any other pre-institution claim construction of the claim terms discussed in Section IV below to find the Petition deficient. For the reasons presented in Section IV below, Petitioner's Grounds 1-3 include fundamental flaws and fail to establish the disclosure or suggestion of every element in each independent claim.

IV. THE PETITION'S CHALLENGES FAIL ON THE MERITS

A. Overview of Petitioner's Challenges

Ground	Prior Art	Basis	Indep. Claims	Dep. Claims
1	Watanabe (EX1006) and/or Watanabe in view of Friedrichs (EX1011)	§ 102 / § 103	1, 12, 13, 14	2, 3, 4, 5, 6, 7, 8, 11, 15, 16
2	Watanabe (EX1006), Friedrichs (EX1011), and de Boer (EX1007)	§ 103	—	9
3	Watanabe (EX1006), Friedrichs (EX1011), de Boer (EX1007), Kirsten (EX1008), and Xu (EX1017)	§ 103	—	10

Ground 1 presents at least three challenges, Watanabe alone (under § 102), Watanabe alone (under § 103), and Watanabe in view of Friedrichs (under § 103), and applies to each independent claim. Whichever way the Groups are categorized, however, it makes no difference because Watanabe fails to disclose elements [1.3] and [1.4] of claim 1 of the '120 patent (and corresponding

limitations in claims 12, 13, and 14), and none of the other references remedy the deficiencies of Watanabe.

B. Watanabe, as well as Fredrichs, Does Not Disclose or Suggest Updating an Estimate of a Target Parameter Vector Using the Elitism as Recited in Independent Claims 1, 12, 13, and 14

In each iteration of the process recited in claim 1, claim element [1.3] requires “selecting, from the random sample of hyperparameter vectors, a hyperparameter vector producing a best result in the present and any previous iterations.” Claim element [1.4] updates the “estimate of the target hyperparameter vector” using the “hyperparameter vector producing the best result.” Claims 12, 13, and 14 contain similar recitations. This is an elitist process that identifies the elite value from all prior iterations and the present iteration, and uses that elite value in the present iteration’s update of the estimated target hyperparameter vector.

Putting aside that Petitioner has not explained how “hyperparameter” should be construed and has not demonstrated the presence of “hyperparameters” as properly construed in the references, the Petition fails because Petitioner has not shown that the iterative processes in Watanabe and Fredrichs disclose or suggest the claimed elitist methods of estimating a target vector as recited in the challenged claims.

The Petition addresses element [1.3] at pages 44-46 of the Petition. But rather than discussing disclosures found in its allegedly-anticipatory Watanabe reference, the Petition states, “Genetic-based classifier tuning algorithms utilizing crossover, mutation, recombination, and elitism techniques, had been used at the time of the ’120 Patent for hyperparameter optimization.” Pet., 44-45. The Petition then states (with emphasis added):

It was well-known for recombination operations of genetic-based algorithms to include elitism selection (i.e., selecting a solution producing a best result in the present and any previous iterations), as evidenced by Shaefer (EX1013) (“The [genetic] operators may also include (i) an elitist operator which stores information about the token representing a favorable possible solution in one iteration, and reimports the information to a population of tokens in a later iteration; (ii) another elitist operator that adjusts the adaptive translation mapping to assure that information is not lost from one adaptation procedure to the next;....” 7:11-26. EX1018, ¶185. An elitist strategy (e.g., the one disclosed by Shaefer), ensures the ***best of any previous iteration is in the next iteration***. EX1018, ¶186.

First, not only is it improper to hand-wave allegedly “well-known” aspects of the prior art in place of disclosures in patents and printed publications, but none of Petitioner’s Grounds rely on Shaefer. Petitioner provides no motivation to use

Shaefer's techniques with Watanabe or Fredrichs. Indeed, the Petition presents an "even if" scenario, contending "[e]ven if Watanabe's recombination operation is somehow found to not expressly satisfy the recited 'selecting, from the random sample of hyperparameter vectors, a hyperparameter vector producing a best result in the present and any previous iterations' ... , it would have been obvious to utilize an elitist strategy." Pet., 45. While the Petition then describes advantages to elitism, the Petition never ties those advantages to Shaefer or otherwise shows how Shaefer's disclosures relate to Watanabe's or Fredrich's techniques.

Second, the Petition admits that Watanabe's initialization and mutation techniques only produce a "best result instantaneously," (*see* Pet. 46), as opposed to selecting a randomly-selected vector producing a best result "in the present and any previous iterations." As the Examiner stated when allowing the '120 patent, the claims address that "the vector produces a best result and is not accepted, itself, as the best result." EX1002, p.23. In contrast, the Petition contends, "Watanabe's 'solution vector having the highest fitness in the *most recent solution vector set*' *constitutes the best result* with respect to the present and previous iterations." Pet., 46 (emphasis added). As Petitioner's theory of Watanabe computes and always presumes that the most recent solution vector set contains the best solution, Petitioner fails to demonstrate the presence of any "selection" of a randomly sampled hyperparameter vector in Watanabe as being the "best" across all prior

iterations and the present iteration. In this manner, Watanabe fails to disclose at least element [1.4] of claim 1, along with the corresponding features of independent claims 13 and 14.

Third, as highlighted above, the Petition admits that the typical use of elitism is “in the next iteration.” Pet., 45. Thus, the Petition fails to demonstrate, in the same iteration as the selection of element [1.3], “updating the estimate of the target hyperparameter vector by using the random sample” (from element [1.2]) where the “updating the estimate of the target hyperparameter vector uses said hyperparameter vector producing the best result,” as recited in element [1.4].

The Petition addresses element [1.4] at pages 46-47 of the Petition. The discussion is reproduced in full below, for the purpose of illustrating that nothing in the Petition analyzes element [1.4] or demonstrates the presence of element [1.4] in Watanabe (or Fredrichs). The Petition alleges:

Watanabe discloses and suggests Element [1.4].
EX1018, ¶194.

Watanabe discloses “updating the estimate of the target hyperparameter vector by using the random sample”, “wherein the step of updating the estimate of the target hyperparameter vector uses said hyperparameter vector producing the best result”. See Section VII.A.1.b /c. (discussing Elements [1.2]-[1.3]).
EX1018, ¶195.

Element [1.4] recites that “the step of updating the estimate of the target hyperparameter vector” recited in Element [1.2] uses “said hyperparameter vector producing the best result” recited in Element [1.3]. That is, the hyperparameter vector producing the best result is selected according to Element [1.3], and the selected hyperparameter vector is then used to update the estimate according to Element [1.2]. Thus, Claim 1 at least encompasses performing the step recited in Element [1.3] before the step recited in Element [1.2], and Watanabe discloses and suggests performing the step recited in Element [1.3] before the step recited in Element [1.2].

See Section VII.A.1.b/c. EX1018, ¶¶196-198.

Finally, and perhaps most glaring when addressing elements [1.3] and [1.4], the Petition ignores Watanabe's actual teachings concerning “an elite strategy,” which confirm there is no “selection” and “updating” within an iteration as claimed. Indeed, while the Petition suggests that the “recombination” processes found in Embodiments 1 to 23 of Watanabe disclose or suggest elitism (Pet., 45), Watanabe confirms that it does not.

Watanabe states that “an elite strategy wherein high-fitness, superior solution vectors are copied unchanged into the *next new* solution vector set” can be considered “in combination” with Roulette wheel selection of Watanabe's other embodiments. Watanabe, 67:26-34. This “elite strategy” in Watanabe simply

ensures that the best of Watanabe's computed solution vectors are preserved for the "next new solution vector set." This process involves no comparison of the results of those solution vectors in the current iteration to the results of "previous" solution vectors from other iterations or other mechanism to select "a best result in the present and any previous iterations." Moreover, including more solution vectors in the "next new" solution vector set does not update an estimated target vector in present iteration. Instead, it merely ensures that the best computed vectors from the previous iteration can be found in the next iteration of Watanabe.

Thus, Watanabe fails to disclose or suggest the inventions recited in independent claims 1, 12, 13, and 14. The Petition does not rely on Fredrichs, which also does not use the claimed iterative process, to patch up any deficiencies of Watanabe with regard to elements [1.3] and [1.4]. Thus, Ground 1 fails.

Grounds 2 and 3, which are directed to dependent claims, also fail for the simple reason that the Petition does not show how the de Boer, Kirsten, and Xu references bear on elements [1.3] and [1.4]. For each of these reasons, the Petition fails to establish the anticipation or obviousness of any challenged claim, and it should be denied on the merits.

V. CONCLUSION

For the foregoing reasons, the Board should deny the Petition and decline to institute *inter partes* review of claims 1-16 of the '120 patent.

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CERTIFICATE OF WORD COUNT

The undersigned certifies that the foregoing **PATENT OWNER'S PRELIMINARY RESPONSE** complies with the type-volume limitation in 37 C.F.R. § 42.24(b)(1). According to the word-processing system's word count, the brief contains 2,870 words, excluding the parts of the brief exempted by 37 C.F.R. § 42.24(a).

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CERTIFICATE OF SERVICE

I hereby certify that on July 1, 2026, a true and correct copy of the foregoing document was served via email, by consent, to Petitioner by serving the correspondence email addresses of record as follows:

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