

2. **The Board properly rejected Petitioner’s assertion that a “non-exhaustive search” should be construed as “a search that locates a match without conducting a brute force comparison of all possible matches, and all data within all possible matches.”**

83. The “all data” clause (that I underlined above) in Petitioner’s proposed construction (Pet. (‘237) at 5; Decision (‘237) at 5-7) would improperly include as a “non-exhaustive” search any search that did not compare “all data” in each record, even if the search were a brute force comparison of each record in the database. As an illustrative example, assume the work to be identified “ABC” is compared with all records in a library, including record “DEF.” When comparing “ABC” with “DEF,” the algorithm determines that there is no match between “ABC” and “DEF” after just comparing the first letter of the work “A” with the first letter of the record “D.” If the algorithm does not unnecessarily compare the second and third letters, then according to Petitioner, the search is not “exhaustive” even though every record is compared.

84. Petitioner’s Declarant states that a non-exhaustive search is any search that is not a brute force search, and a “brute force” search, in turn, is a search wherein a query is compared to every single portion of every single item in a database.” Moulin Decl. (‘237) ¶43. Petitioner’s Declarant, however, provides no

analysis or support for this conclusory assertion which, I understand, is insufficient to satisfy Petitioner's burden in these IPR proceedings.

85. One skilled in the art would understand that the "all data" clause is improper because it is:

- inconsistent with how the non-exhaustive search concept is used in the IPR Patents which describes a linear exhaustive search as one where the search compares the work to all "N entries," not all data within all "N entries" (*see e.g.*, '179, 21:10-42; 8:59-9:54); and
- not part of the ordinary meaning of "non-exhaustive search" (*see* Ex. 2001).

86. Moreover, objective sources confirm my understanding that an "exhaustive" or "brute-force" search systematically compares the work with each record in a database, not all data within each record, for example:

"In computer science, brute-force search or exhaustive search, also known as generate and test, is a very general problem-solving technique that consists of systematically enumerating all possible candidates for the solution and checking whether each candidate satisfies the problem's statement."

Ex. 2001—each "candidate" is checked, not "all data" within each candidate.

87. Petitioner’s own Declarant twice confirmed my understanding—that a “non-exhaustive” search searches a subset of “potential matches,” not a subset of “all data within all potential matches”:

- (1) “Because neighbor searching is computationally intensive, content recognition schemes typically employed search algorithms that increased efficiency by intelligently searching only a subset of potential matches (*i.e.*, ‘non-exhaustive’ algorithms).” Moulin Decl. (‘237) ¶12;
- (2) “to maximize search efficiency, persons skilled in the art routinely employed more efficient searches that did not conduct a comparison of every single item in a database, sometimes referred to as non-exhaustive searches.”
Moulin Decl. (‘237) ¶43.

88. For the reasons that I presented above, one skilled in the art would understand that the Board properly rejected Petitioner’s “all data” clause.
Decision (‘237) at 6.

C. neighbor search / identifying a neighbor / neighbor / near neighbor (‘237, ‘988, ‘179, and ‘441 patents).

89. One skilled in the art would understand that the Board properly construed a “neighbor search” and “identifying a neighbor” as “identifying a close, but not necessarily exact or closest, match” and “neighbor” and “near neighbor” as

“a close, but not necessarily exact or closest, match.” Decision (‘237) at 8;
Decision (‘988) at 7-8; Decision (‘179) at 8; Decision (‘441) at 7.

90. Petitioner and its Declarant agree with the Board’s construction of “neighbor search.” *See e.g.*, Petition (‘179) at 6 (“The term ‘neighbor search’ ... should be construed to mean ‘identifying a close, but not necessarily exact, match.’”); Moulin Decl. (‘179) ¶45 (“‘neighbor search’ means ‘identifying a close, but not necessarily exact, match.’”); Moulin Depo. 250:2-5.

91. One skilled in the art would understand that there are two relevant features of a neighbor search under this construction:

92. Feature 1: If a search necessarily identifies an exact or the closest match (*i.e.*, the search is designed to guarantee that an exact or the closest match is identified each time the search is performed), it is not a neighbor or near neighbor search because it is not a search that “identif[ies] a close, but not necessarily exact or closest, match.” Rather, such a search necessarily identifies an exact or the closest match.

93. Feature 2: If a search that necessarily identifies an exact or the closest match (*e.g.*, Match 1) but also identifies other matches that, by definition, are not the closest match (Match 2, Match 3, Match 4), the search still necessarily identifies an exact or the closest match (Match 1) and therefore cannot be the claimed neighbor or near neighbor search.

D. approximate nearest neighbor search ('237 patent).

94. As I noted above, the Petitioner did not identify a construction of “approximate nearest neighbor search.”

95. The Board preliminary determined that an “approximate nearest neighbor search” is a search “identifying a close match that is not necessarily the closest match.” Decision ('237) at 9. One skilled in the art would understand that this construction is correct, but incomplete, as demonstrated by the '237 specification. The '237 specification states that the claimed “approximate nearest neighbor search” is [1] a sub-linear neighbor search that [2] does not always find the closest point to the query—*i.e.*, does not always find the closest match:

“[1] One example of a sub-linear time search is an approximate nearest neighbor search. [2] A nearest neighbor search always finds the closest point to the query. An approximate nearest neighbor search does not always find the closest point to the query. For example, it might do so with some probability, or it might provide any point within some small distance of the closest point.”

'237, 9:12-19.

96. The first feature—that a “approximate nearest neighbor search” is a sub-linear time search—is not reflected in the Board’s preliminary construction and, as demonstrated below, should be included in the construction. The second

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