

neighbor search cannot be carried out by distinguishing a difference in direction, as in a case that a weight is given heavier to a distance in a direction than a distance in another direction. The reason is in that a technique depending on only the distance is used in a conventional nearest neighbor search.

10 A second problem is in that an unnecessary calculation time is required in the conventional technique, when there is an interest to the similarity in only an aspect. In the conventional technique, this is because the direction is not considered, so that the process of 2 steps of extracting candidates by the nearest neighbor detection in all the directions, and of taking out only data along an interested direction is required. Because the number of candidates detected in the nearest neighbor becomes enormous as a difference of the strength of the interest is larger in dependence on the direction (when a difference in the weight of distance between a direction and another direction is very large), the reduction effect of the calculation time cannot be expected too much.

~~An object of Embodiments of~~ the present invention ~~is to provide~~ a similarity detecting apparatus and a directional nearest neighbor detection method, in which in a nearest neighbor detection in a space that a difference of a feature is defined as a distance, a nearest neighbor data can be detected at a high speed by specifying an optional similarity criterion (an optional direction and an importance of an optional distance).

35 In one aspect of the invention, a similarity detecting apparatus is provided. The similarity

detecting apparatus detects similar data from search
object data based on an optional similarity criterion.

5 The similarity detecting apparatus comprises means for
retaining a table related to random number data
generated based on a parameter for setting the
similarity criterion, means for registering and
managing the search object data on the table; and
10 means for carrying out a similarity detection by using
the table based on the criterion of similarity in
response to a nearest neighbor search request from an
optional reference point, and outputting data detected
to be a nearest neighborhood.

15 The similarity detecting apparatus according
to the present invention is composed of a random
number generating section, an initializing section, a
data registering section, a searching section and a