Claims

1. A product indexing method comprising

receiving product data of a product, the product data comprising at least an image, wherein the image comprises a product image of the product and a context image which provides the context that the product is in, wherein the context image comprises at least one non-product image;

identifying the product image;

identifying the context image from the image;

verifying the product in the product image based on the context image;

extracting the product image;

indexing the product image; and

orientating the product image to match a pre-defined viewpoint of the product image.

2. The product indexing method of claim 1, further comprising determining a product category of the product based on the product data, wherein the product image is identified based on the product category.

3. The product indexing method of claim 2, further comprising generating a product prediction score, where the product category is determined based on the product prediction score.

4. The product indexing method of claim 3, wherein the production prediction score comprises a text prediction score and/or an image prediction score.

5. The product indexing method of any one of claims 2 to 4, wherein the product data comprises a product text of the product, wherein the product category is determined based on the product text.

6. The product indexing method of any one of claims 2 to 5, wherein the product text comprises a product name of the product, wherein the product category is determined based on the product name.

7. The product indexing method of any one of claims 2 to 6, wherein the product text comprises a product description of the product, wherein the product category is determined based on the product description.

8. The product indexing method of any one of claims 2 to 7, wherein the product category is determined based on the product image.

9. The product indexing method of any one of claims 2 to 8, wherein the product image is identified based on the product category.

10. The product indexing method of any one of claims 1 to 9 further comprising determining the position of the product image within the image.

11. The product indexing method of claim 10, further comprising determining the position of the context image within the image.

12. The product indexing method of any one of claims 1 to 11, further comprising identifying a relationship between the product image and the context image.

13. The product indexing method of claim 12, wherein identifying the relationship comprises determining the spatial relationship between the product image and the context image.

14. The product indexing method of any one of claims 1 to 13, further comprising defining the product image.

15. The product indexing method of claim 14, further comprising refining the defined product image.

16. The product indexing method of any one of claims 1 to 15, further comprising identifying a viewpoint of the product in the product image.

17. The product indexing method of claim 1, wherein the pre-defined viewpoint of the product image is defined by ~~the~~ a product category of the product.

18. The product indexing method of any one of claims 1 to 17, further comprising generating an another viewpoint of the product.

19. The product indexing method of claim 18, wherein the another viewpoint is generated based on a pre-defined viewpoint of the product by ~~the~~ a product category.

20. The product indexing method of any one of claims 1 to 19, wherein indexing the product image comprises indexing the viewpoint and/or another viewpoint of the product image.

21. The product indexing method of any one of claims 2 to 20, wherein indexing of the product image is based on the product category of the product.

22. A product indexing method comprising:

receiving an input image;

analyzing the input image, the analyzing including:

identifying a product in the input image;

predicting, based on the identified product, a product category for the identified product from among a plurality of pre-defined product categories, each pre-defined product category covering one or more products, each pre-defined product category having one or more required viewpoints for the one or more covered products in the pre-defined product category, wherein the predicted product category includes one or more required viewpoints for the identified product;

selecting, based on the identified product, a product image from the input image, the selected product image being one or more sections of the input image that provide a visual representation of the identified product;

selecting, based on the selected product image, a context image from the input image, the selected context image being one or more sections of the input image other than the product image that provide contextual information for the identified product in the selected product image; and

verifying the selected product image to determine whether the selected product image needs to be refined, the verifying based on the selected context image and the predicted product category;

determine, based on the verifying, whether the selected product image needs to be refined;

responsive to a determination that the selected product image does not need to be refined:

identifying a viewpoint of the identified product in the selected product image, the viewpoint of the identified product in the selected product image identified based on a comparison of the selected product image with one or more of the required viewpoints in the predicted product category;

extracting the selected product image based on the identified viewpoint of the identified product in the selected product image; and

indexing the extracted product image.

23. The product indexing method of claim 22, further comprising generating a product prediction score, wherein the predicted product category is determined based on the product prediction score.

24. The product indexing method of claim 23, wherein the product prediction score comprises a text prediction score and/or an image prediction score.

25. The product indexing method of claim 22, wherein the input image comprises a product text, the product text being a textual description of the product, wherein the predicted product category is determined based on the product text.

26. The product indexing method of claim 25, wherein one or more of the following apply:

the product text comprises a product name of the product, wherein the predicted product category is determined based on the product name;

the product text includes a product description of the product, wherein the predicted product category is determined based on the product description;

the predicted product category is determined based on the product image; and/or

the product image is identified based on the predicted product category.

27. The product indexing method of claim 22, further comprising determining a position of the selected product image within the input image.

28. The product indexing method of claim 22, further comprising determining a position of the selected context image within the input image.

29. The product indexing method of claim 22, further comprising identifying a relationship between the selected product image and the selected context image.

30. The product indexing method of claim 29, wherein identifying the relationship comprises determining the spatial relationship between the selected product image and the selected context image.

31. The product indexing method of claim 22, wherein when the verifying indicates that the selected product image needs to be refined:

refining the selected product image;

identifying a viewpoint of the identified product in the refined product image, the viewpoint of the identified product in the refined product image identified based on a

comparison of the refined product image with one or more of the required viewpoints in the predicted product category;

extracting the refined product image based on the identified viewpoint of the identified product in the refined product image; and

indexing the extracted product image.

32. The product indexing method of claim 22, further comprising adjusting an orientation of the selected product image to match one of the required viewpoints in the predicted product category.

33. The product indexing method of claim 22, further comprising generating an another viewpoint of the identified product in the selected product image, the another viewpoint being different from the identified viewpoint of the identified product in the selected product image.

34. The product indexing method of claim 33, wherein the another viewpoint is generated based on one or more of the required viewpoints in the predicted product category.

35. The product indexing method of claim 22, wherein the indexing of the extracted product image comprises indexing the identified viewpoint and/or another viewpoint of the identified product in the selected product image.

36. The product indexing method of claim 22, wherein the indexing of the extracted product image is based on the predicted product category.