Claims

1. A computer-implemented system for providing product recommendations, the system comprising:

a memory storing instructions; and

at least one processor configured to execute the instructions to:

receive, from a user device, a search query for a target product;

define, using a query handler cluster, context associated with the search query;

identify, using a search cluster, one or more products associated with the defined context;

reverse index a first set of features associated with the one or more products to determine one or more filters associated with the one or more products, wherein the one or more filters are based on one or more product-to-product relations determined by reverse indexing the first set of features;

filter, using the search cluster and the determined one or more filters, the one or more products associated with the defined context based on features associated with the one or more products stored in a database;

generate a score for each product using a machine learning model trained based on one or more product relation features;

rank, using the search cluster, the one or more products associated with the defined context in a first order based on the score;

display, on the user device, product recommendations in the first order, wherein the product recommendations comprise a number of the one or more ranked products;

monitor, using the search cluster, user feedback information comprising click rates associated with the product recommendations;

update the machine learning model using the user feedback information; and

rank, using the search cluster, the one or more products associated with the defined context in a second order based on the updated machine learning model,

wherein the one or more product relation features are associated with a relationship between the products recommended to the user and the target product.

2. The system of claim 1, wherein the context associated with the search query comprises at least one of a product associated with the search query, a timestamp of the search query, a product category associated with the search query, or user information associated with the search query.

3. The system of claim 1, wherein the features associated with the one or more products comprise at least one of related products, related product categories, related product images, feedback score, product category, product price, product review, or product discount.

4. The system of claim 1, wherein the features associated with the one or more products are indexed.

5. The system of claim 4, wherein the features associated with the one or more products are reverse indexed to determine one or more related products associated with each of the one or more products.

6. The system of claim 1, wherein the machine learning model is configured to predict performance associated with product recommendations.

7. The system of claim 1, wherein the at least one processor is further configured to execute the instructions to:

log information associated with a user of the user device, wherein the information comprises at least one of products seen by the user, products purchased

by the user, products searched by the user, user product preference, user price preference, or user brand preference; and

generate features associated with the user.

8. The system of claim 7, wherein the at least one processor is further configured to execute the instructions to:

filter the one or more products associated with the defined context based on the features associated with the one or more products stored in a database and the features associated with the user.

9. A computer-implemented method for providing product recommendations, the method comprising:

receiving, from a user device, a search query for a target product;

defining, using a query handler cluster, context associated with the search query;

identifying, using a search cluster and the determined one or more filters, one or more products associated with the defined context;

reverse indexing a first set of features associated with the one or more products to determine one or more filters associated with the one or more products, wherein the one or more filters are based on one or more product-to-product relations determined by reverse indexing the first set of features;

filtering, using the search cluster and the determined one or more filters, the one or more products associated with the defined context based on features associated with the one or more products stored in a database;

generating a score for each product using a machine learning model trained based on one or more product relation features;

ranking, using the search cluster, the one or more products associated with the defined context in a first order based on the score;

displaying, on the user device, product recommendations in the first order, wherein the product recommendations comprise a number of the one or more ranked products;

monitoring, using the search cluster, user feedback information comprising click rates associated with the product recommendations;

updating the machine learning model using the user feedback information;

ranking, using the search cluster, the one or more products associated with the defined context in a second order based on the updated machine learning model; and

displaying, on the user device, the product recommendations in the second order, wherein the product recommendations comprise a number of the one or more ranked products,

wherein the one or more product relation features are associated with a relationship between the products recommended to the user and the target product.

10. The method of claim 9, wherein the context associated with the search query comprises at least one of a product associated with the search query, a timestamp of the search query, a product category associated with the search query, or user information associated with the search query.

11. The method of claim 9, wherein the features associated with the one or more products comprise at least one of related products, related product categories, related product images, feedback score, product category, product price, product review, or product discount.

12. The method of claim 9, wherein the features associated with the one or more products are reverse indexed to determine one or more related products associated with each of the one or more products.

13. The method of claim 9, wherein the machine learning model is configured to predict performance associated with product recommendations.

14. The method of claim 9, further comprising:

logging information associated with a user of the user device, wherein the information comprises at least one of products seen by the user, products purchased by the user, products searched by the user, user product preference, user price preference, or user brand preference; and

generating features associated with the user.

15. The method of claim 14, further comprising:

filtering the one or more products associated with the defined context based on the features associated with the one or more products stored in a database and the features associated with the user.

16. A computer-implemented system for providing product recommendations, the system comprising:

a memory storing instructions; and

at least one processor configured to execute the instructions to:

receive, from a user device, a search query for a target product;

define, using a query handler cluster, context associated with the search query;

identify, using a search cluster, one or more products associated with the defined context;

reverse index a first set of features associated with the one or more products to determine one or more filters associated with the one or more products, wherein the one or more filters are based on one or more product-to-product relations determined by reverse indexing the first set of features;

filter, using the search cluster and the determined one or more filters, the one or more products associated with the defined context based on features associated with the one or more products stored in a database and features associated with a user of the user device;

generate a score for each product using a machine learning model trained based on one or more product relation features;

rank, using the search cluster, the one or more products associated with the defined context in a first order based on a score generated for each product;

display, on the user device, product recommendations in the first order, wherein the product recommendations comprise a number of the one or more ranked products;

monitor, using the search cluster, user feedback information comprising click rates associated with the product recommendations;

update the machine learning model using the user feedback information;

rank, using the search cluster, the one or more products associated with the defined context in a second order based on the updated machine learning model; and

display, on the user device, the product recommendations in the second order, wherein the product recommendations comprise a number of the one or more ranked products,

wherein the one or more product relation features are associated with a relationship between the products recommended to the user and the target product.