CLAIMS

1. A method in a distributed reservation system for generating priced travel recommendations according to non-binding travel queries, the distributed reservation system having access to a plurality of travel databases containing information on travel availability and fares according to a plurality of parameters, each travel query including a set of preferences each preference being related to a parameter selected among the plurality of parameters, the method including:

- maintaining on a plurality of fast access memory location a cache including a selection of pre-computed travel recommendations each travel recommendation including information on fares and/or availability for a specific travel, sorted by at least one of the plurality of parameters;

- assigning to each of the cached travel recommendations a score indicative of a needed refresh frequency;

- updating the selection of pre-computed travel recommendations by launching a massive query in the plurality of databases for refreshing the information included in at least some of the travel recommendations, wherein the frequency of the refresh of each travel recommendation depends on the assigned score;

- responsive to a travel query being received by the system, searching the plurality of fast access memory locations, to find those travel recommendations which fulfil the preferences included in the travel query;

- issuing a response to users for the travel query and updating the score of the selection of travel recommendations.

2. The method of claim 1 wherein the score indicative of the needed refresh frequency includes a value indicative of the volatility of the information on availability and/or fares of the travel recommendation.

3. The method of any preceding claim wherein the score indicative of the needed refresh frequency includes a value indicative of the popularity of the travel recommendation.

4. The method of any preceding claims wherein the access to the plurality of travel databases and the step of enriching the selection of pre-computed travel recommendations is done by means of a dedicated sub-system.

5. The method of any preceding claim further comprising:

- dividing the selection of pre-computed travel recommendations into a plurality of homogeneous groups, wherein each travel recommendation in an homogeneous group has at least a predetermined number of parameters with the same value, and storing each group in one of the fast access memory locations.

6. The method of any preceding claim wherein the step of launching the massive query is done at predetermined time interval.

7. The method of any preceding claim wherein the massive query is done with a batch process.

8. The method of any preceding claim wherein the travel recommendations stored on the plurality of fast access memory locations are indexed according to a multi-dimensional data structure.

9. The method of any preceding claim further including:

- responsive to no results being obtained by searching the plurality of fast access memory locations, launching a series of closely related queries with relaxed constraints on the plurality of parameters, in the aims of returning approaching results for information purposes.

10. The method of any claim 1 to 8, further including:

- responsive to no results being obtained by searching the plurality of fast access memory locations, issuing an alert message to the user.

11. A computer program comprising instructions for carrying out the steps of the method according to any preceding claim, when said computer program is executed on a computer.

12. A computer program product including computer readable means embodying the computer program of claim 10.

13. A software tool for pre-shopping system including the method of any claim 1 to 10.

14. A distributed data processing system for managing pre-shopping travel queries, the distributed data-processing system having access to a plurality of travel databases containing information on travel availability and fares according to a plurality of parameters, each travel query including a set of preferences each preference being related to a parameter selected among the plurality of parameters, wherein the system comprises one or more components adapted to perform the method of any claim 1 to 10.

15. A service deployed in a data processing system for implementing the method of any claim 1 to 10.

Claims

1. A computer program product comprising:

a non-transitory computer readable medium; and

program code stored on the computer readable storage medium that, when executed by a processor, causes the processor to:

store a plurality of pre-computed travel recommendations in a fast access memory of the computer, each pre-computed travel recommendation comprising a price of the travel recommendation;

assign a score to each pre-computed travel recommendation, the score indicative of a frequency with which the corresponding pre-computed travel recommendation is re-computed;

select one or more of the plurality of pre-computed travel recommendations for re-computing based on the assigned scores;

launch a query in the plurality of travel databases to obtain data relating to the selected pre-computed travel recommendations;

re-compute the selected pre-computed travel recommendations based on the data obtained by the query;

determine a frequency with which the price of the selected pre-computed travel recommendations changes over a first span of dates including a punctual event;

determine the frequency with which the price of the selected pre-computed travel recommendations changes over a second span of dates not including the punctual event;

adjust the score of the selected pre-computed travel recommendations based on whether the current date falls in the first span or the second span of dates;

in response to receiving the travel query, search within the plurality of pre-computed travel recommendations in the fast access memory of the computer for travel recommendations that satisfy the parameters included in the travel query; and

issue a response to the user for the travel query, the response including the pre-computed travel recommendations satisfying the parameters included in the travel query.

2. A method for providing priced travel recommendations according to a travel query from a user, the travel query received by a computer having one or more processors and access to a plurality of travel databases, the travel query including one or more parameters, the method comprising:

storing a plurality of pre-computed travel recommendations in a fast access memory of the computer by at least one of the processors, each pre-computed travel recommendation comprising a price of the travel recommendation;

assigning a score to each pre-computed travel recommendation by at least one of the processors, the score indicative of a frequency with which the corresponding pre-computed travel recommendation is re-computed;

determining a frequency with which the price of the corresponding pre-computed travel recommendation changes over a first span of dates including a punctual event;

determining a frequency with which the price of the corresponding pre-computed travel recommendation changes over a second span of dates not including the punctual event;

adjusting the score of the corresponding pre-computed travel recommendation based on whether the current date falls in the first span or the second span of dates;

selecting one or more of the plurality of pre-computed travel recommendations for recomputation by at least one of the processors based on the assigned scores;

launching a query in the plurality of travel databases by at least one of the processors to obtain data relating to the selected pre-computed travel recommendations;

re-computing the selected pre-computed travel recommendations by at least one of the processors based on the data obtained by the query;

in response to receiving the travel query, searching by at least one of the processors within the plurality of pre-computed travel recommendations in the fast access memory of the computer for travel recommendations that satisfy the parameters included in the travel query; and

issuing a response to the user by at least one of the one or more processors, the response including one or more of the pre-computed travel recommendations satisfying the parameters included in the travel query.

3. The method of claim 2 wherein the score indicative of the frequency with which the corresponding pre-computed travel recommendation is re-computed is based at least in part on a value indicative of a volatility of the price of the travel recommendation.

4. The method of claim 2 wherein the score indicative of the frequency with which the corresponding pre-computed recommendation is re-computed includes a value indicative of a popularity of the travel recommendation.

5. The method of claim 2 wherein launching the query in the plurality of travel

databases and re-computing the selected pre-computed travel recommendations is done by a dedicated sub-system.

6. The method of claim 2 further comprising: dividing the plurality of pre-computed travel recommendations into a plurality of homogeneous groups, each pre-computed travel recommendation in a homogeneous group having at least one parameter with the same value, and storing each group in one of a plurality of fast access memory locations.

7. The method of claim 2 wherein launching the query in the plurality of travel databases to obtain data relating to the selected pre-computed travel recommendations is done at a predetermined time interval.

8. The method of claim 2 wherein the query in the plurality of travel databases to obtain data relating to the selected pre-computed travel recommendations is done with a batch process.

9. The method of claim 2 further comprising: indexing the plurality of pre-computed travel recommendations according to a multi-dimensional data structure.

10. The method of claim 2 further comprising: in response to none of the pre-computed travel recommendations satisfying the parameters included in the travel query received from the user, searching within the plurality of pre-computed travel recommendations for travel recommendations that satisfy a travel query with relaxed constraints on one or more of the parameters included in the user travel query.

11. The method of claim 2 further comprising: in response to none of the pre-computed travel recommendations satisfying the parameters included in the travel query received from the user, issuing an alert message to the user.

12. A method for providing priced travel recommendations according to a travel query from a user, the travel query received by a computer having one or more processors and access to a plurality of travel databases, the travel query including one or more parameters, the method comprising:

storing a plurality of pre-computed travel recommendations in a fast access memory of the computer by at least one of the processors, each pre-computed travel recommendation comprising a price of the travel recommendation;

assigning a score to each pre-computed travel recommendation by at least one of the processors, wherein the score is indicative of a frequency with which the corresponding pre-computed travel recommendation is re-computed, and wherein the score indicative of the frequency with which the corresponding pre-computed travel recommendation is re-computed is based at least in part on a value indicative of a volatility of the price of the travel recommendation;

determining the volatility of the price of the corresponding pre-computed travel recommendation by comparing a price previously stored for the pre-computed travel recommendation to the price for the re-computed travel recommendation, and adjusting the volatility of the price of the corresponding pre-computed travel recommendation based on a difference between the stored and re-computed prices;

selecting one or more of the plurality of pre-computed travel recommendations for recomputation by at least one of the processors based on the assigned scores;

launching a query in the plurality of travel databases by at least one of the processors to obtain data relating to the selected pre-computed travel recommendations;

re-computing the selected pre-computed travel recommendations by at least one of the processors based on the data obtained by the query;

in response to receiving the travel query, searching by at least one of the processors within the plurality of pre-computed travel recommendations in the fast access memory of the computer for travel recommendations that satisfy the parameters included in the travel query; and

issuing a response to the user by at least one of the one or more processors, the response including one or more of the pre-computed travel recommendations satisfying the parameters included in the travel query.

13. The method of claim 12 wherein the score indicative of the frequency with which the corresponding pre-computed recommendation is re-computed includes a value indicative of a popularity of the travel recommendation.

14. The method of claim 12 wherein launching the query in the plurality of travel databases and re-computing the selected pre-computed travel recommendations is done by a dedicated sub-system.

15. The method of claim 12 further comprising: dividing the plurality of pre-computed travel recommendations into a plurality of homogeneous groups, each pre-computed travel recommendation in a homogeneous group having at least one parameter with the

same value, and storing each group in one of a plurality of fast access memory locations.

16. The method of claim 12 wherein launching the query in the plurality of travel databases to obtain data relating to the selected pre-computed travel recommendations is done at a predetermined time interval.

17. The method of claim 12 wherein the query in the plurality of travel databases to obtain data relating to the selected pre-computed travel recommendations is done with a batch process.

18. The method of claim 12 further comprising: indexing the plurality of pre-computed travel recommendations according to a multi-dimensional data structure.

19. The method of claim 12 further comprising: in response to none of the pre-computed travel recommendations satisfying the parameters included in the travel query received from the user, searching within the plurality of pre-computed travel recommendations for travel recommendations that satisfy a travel query with relaxed constraints on one or more of the parameters included in the user travel query.

20. The method of claim 12 further comprising: in response to none of the pre-computed travel recommendations satisfying the parameters included in the travel query received from the user, issuing an alert message to the user.

21. A data processing system comprising:

a processor; and

a memory coupled with the processor, the memory including instructions that, when executed by the processor, cause the processor to:

store a plurality of pre-computed travel recommendations in a fast access memory of the computer, each pre-computed travel recommendation comprising a price of the travel recommendation;

assign a score to each pre-computed travel recommendation, the score indicative of a frequency with which the corresponding pre-computed travel recommendation is re-computed;

select one or more of the plurality of pre-computed travel recommendations for recomputation based on the assigned scores;

launch a query in the plurality of travel databases to obtain data relating to the selected pre-computed travel recommendations;

re-compute the selected pre-computed travel recommendations based on the data obtained by the query;

determine a frequency with which the price of the selected pre-computed travel recommendations changes over a first span of dates including a punctual event;

determine the frequency with which the price of the selected pre-computed travel recommendations changes over a second span of dates not including the punctual event;

adjust the score of the selected pre-computed travel recommendations based on whether the current date falls in the first span or the second span of dates;

in response to receiving the travel query, search within the plurality of pre-computed travel recommendations in the fast access memory of the computer for travel recommendations that satisfy the parameters included in the travel query; and

issue a response to the user, the response including one or more of the pre-computed travel recommendations satisfying the parameters included in the travel query.

22. A computer program product comprising:

a non-transitory computer readable medium; and

program code stored on the computer readable storage medium that, when executed by a processor, causes the processor to:

store a plurality of pre-computed travel recommendations in a fast access memory of the computer, each pre-computed travel recommendation comprising a price of the travel recommendation;

assign a score to each pre-computed travel recommendation, wherein the score is indicative of a frequency with which the corresponding pre-computed travel recommendation is re-computed, and wherein the frequency with which the corresponding pre-computed travel recommendation is re-computed is based at least in part on a value indicative of a volatility of the price of the travel recommendation;

determine the volatility of the price of the corresponding pre-computed travel recommendation by comparing a price previously stored for the pre-computed travel recommendation to the price for the re-computed travel recommendation, and adjusting the volatility of the price of the corresponding pre-computed travel recommendation based on a difference between the stored and re-computed prices;

select one or more of the plurality of pre-computed travel recommendations for re-computing based on the assigned scores;

launch a query in the plurality of travel databases to obtain data relating to the selected pre-computed travel recommendations;

re-compute the selected pre-computed travel recommendations based on the data obtained by the query;

in response to receiving the travel query, search within the plurality of pre-computed travel recommendations in the fast access memory of the computer for travel recommendations that satisfy the parameters included in the travel query; and

issue a response to the user for the travel query, the response including the pre-computed travel recommendations satisfying the parameters included in the travel query.

23. A data processing system comprising:

a processor; and

a memory coupled with the processor, the memory including instructions that, when executed by the processor, cause the processor to:

store a plurality of pre-computed travel recommendations in a fast access memory of the computer, each pre-computed travel recommendation comprising a price of the travel recommendation;

assign a score to each pre-computed travel recommendation, wherein the score is indicative of a frequency with which the corresponding pre-computed travel recommendation is re-computed, and wherein the frequency with which the corresponding pre-computed travel recommendation is re-computed is based at least in part on a value indicative of a volatility of the price of the travel recommendation;

determine the volatility of the price of the corresponding pre-computed travel recommendation by comparing a price previously stored for the pre-computed travel recommendation to the price for the re-computed travel recommendation, and adjusting the volatility of the price of the corresponding pre-computed travel recommendation based on a difference between the stored and re-computed prices;

select one or more of the plurality of pre-computed travel recommendations for recomputation based on the assigned scores;

launch a query in the plurality of travel databases to obtain data relating to the selected pre-computed travel recommendations;

re-compute the selected pre-computed travel recommendations based on the data obtained by the query;

in response to receiving the travel query, search within the plurality of pre-computed travel recommendations in the fast access memory of the computer for travel recommendations that satisfy the parameters included in the travel query; and

issue a response to the user, the response including one or more of the pre-computed travel recommendations satisfying the parameters included in the travel query.