CLAIMS

1. A computer-implemented method for selecting routing paths, wherein a routing path comprises a route and at least one characteristic from a set of characteristics, wherein the route comprises at least a start node and an end node and is provided by at least one carrier, wherein the method comprises:
    a. logging data of selected routing paths in response to requests from client devices to collect historical data of selected routing paths;
    b. storing the data of selected routing paths in a data storage;
    c. training a machine learning model on the historical data of selected routing paths received from the data storage, wherein an output of the machine learning model is a selection prediction for a routing path;
    d. in response to a request from a client device:
        i. determining a set of routes fulfilling the request;
        ii. determining a set of routing paths by combining the set of routes with characteristics from the set of characteristics;
        iii. applying the machine learning model on the set of routing paths to determine a subset of routing paths for which the selection prediction is higher than a threshold;
        iv. querying details of the subset of routing paths, wherein querying details of the subset of routing paths comprises querying at least one of the at least one carrier providing a route in the subset of routing paths and third-party system providing standard industry rules;
        v. determining valid routing paths; and
        vi. returning at least a subset of the details of at least a subset of the valid routing paths to the client device.

2. The method according to claim 1, wherein the machine learning model is trained at a dedicated high-performance computing system comprising a cluster of servers, each server being equipped with at least one central processing unit and at least one graphics processing unit enabling parallel processing of the training.

3. The method according to claim 1 or 2, wherein applying the machine learning model, in response to the request of the client device, is performed at a dedicated inference computing system comprising a hardware-based inference accelerator architecture.

4. The method according to any one of claims 1 to 3, wherein, based on results of the training the machine learning model, at least one additional feature of a route is determined that has an impact on the selected routing paths, and wherein, in response to the request from the client device, the at least one additional feature of a route in the set of routing paths is determined and used as additional input for the machine learning model.

5. The method according to any one of claims 1 to 4, wherein determining valid routing paths comprises analysing the queried details of the subset of routing paths for applicability to the request of the client device.

6. The method according to any one of claims 1 to 5, wherein logging data of selected routing paths comprises logging the routing paths determined in response to an historical request from a client device, the respective routing paths provided to the requesting client device and the routing paths selected by the requesting client device.

7. The method according to any one of claims 1 to 6, wherein the threshold compared with the selection prediction is adapted based on a measured computational capacity for querying details of the subset of routing paths.

8. The method according to any one of claims 1 to 7, wherein the machine learning model is one of a gradient boosted trees or a neural network.

9. The method according to any one of claims 1 to 8 further comprising displaying the details of at least a subset of the valid routing paths on the client device for final selection of a routing path.

10. The method according to any one of claims 1 to 9, wherein the routing path is a fare path, in which the route is a flight path and the set of characteristics comprises pricing units for flight paths, wherein the pricing units comprise at least one of one-way, round trip, single

open jaw, double open jaw, and circle trip, and wherein the details comprise rules and wherein determining valid fare paths comprises analysing the rules provided by the carriers providing a flight path comprised by the subset of fare paths.

11. The method according to claim 10, wherein the details of fare paths comprise at least one of a final price, at least one flight number, departure and/or arrival time, stop-over times, baggage rules, and included meals.

12. The method according to any one of claims 1 to 9, wherein the route is a connection path in a network to transport data packets and the set of characteristics comprises different transmission speeds and/or transmittable volumes of data.

13. A distributed computing system for selecting routing paths, wherein the distributed computing system comprises:

a. a service computing system configured to receive and answer requests for routing paths from client devices;
b. a dedicated high-performance computing system;
c. a data storage;
d. a dedicated inference computing system;

wherein the distributed computing system is configured to execute the method according to any one of claims 1 to 12.

14. A computer program comprising instructions which, when the program is executed by a computer, cause the computer to carry out the method according to any one of claims 1 to 12.