

Claims

1. A computer-implemented system for attendance assignment, the system comprising:
 - a memory storing instructions; and
 - at least one processor configured to execute the instructions to:
 - retrieve, from a database, a plurality of delivery routes and a plurality of delivery sub-routes, wherein the delivery sub-routes are part of the delivery routes;
 - calculate a number of packages allocated to the delivery sub-routes;
 - receive, as a first input, a number and a type of workers available for deliveries, wherein the type including at least one of classification characteristics or efficiency characteristics;
 - modify delivery sub-routes by assigning a plurality of workers to a plurality of sub-routes with additional deliveries, wherein the assignment of sub-routes with additional deliveries is based on a baseline number of packages or addresses assigned to the plurality of workers and a route difficulty, wherein the baseline number is generated for each route on a delivery worker basis;
 - generate, based on the classification characteristics, received first input, and the route difficulty, a plurality of candidate routes;
 - assign a delivery worker to one or more groups and calculate an average deviation value of the one or more groups based on an average value of packages per worker delivery;
 - forward at least one modified delivery sub-route to an electronic device associated with the delivery

worker based at least on the calculated average deviation value of the one or more groups; and receive information from the electronic device relating a delivery in the at least one modified delivery sub-route, wherein the information is configured to be stored as historical data.

2. The computer-implemented system for attendance assignment of claim 1, further comprising receiving, as a second input, one or more volume requests.
3. The computer-implemented system for attendance assignment of claim 2, wherein a first user input further includes a package distribution and an attendance value and a second user input further includes the one or more volume requests requesting more packages for delivery.
4. The computer-implemented system for attendance assignment of claim 1, further comprising assigning the workers to a plurality of groups with assigned efficiency rankings.
5. The computer-implemented system for attendance assignment of claim 1, wherein the baseline number assigned to the worker is generated for each route.
6. The computer-implemented system for attendance assignment of claim 1, further comprising providing additional payment for additional deliveries.
7. The computer-implemented system for attendance assignment of claim 1, wherein the efficiency characteristics of the worker corresponds to a percent of increased workload from the baseline number.
8. The computer-implemented system for attendance assignment of claim 1, wherein assigning the plurality of workers to a plurality of sub-routes with

additional deliveries is further based on a density of addresses and a volume of addresses in each sub-route.

9. The computer-implemented system for attendance assignment of claim 1, wherein the system automatically assigns additional deliveries.
10. The computer-implemented system for attendance assignment of claim 1, wherein the system utilizes past seventy days of historical data of average addresses per hour to determine route difficulty and the baseline number.
11. A computer-implemented method for attendance assignment, the method comprising:
 - retrieving, from a database, a plurality of delivery routes and a plurality of delivery sub-routes, wherein the delivery sub-routes are part of the delivery routes;
 - calculating a number of packages allocated to the delivery sub-routes;
 - receiving, as a first input, a number and a type of workers available for deliveries, wherein the type including at least one of classification characteristics or efficiency characteristics;
 - modifying delivery sub-routes by assigning a plurality of workers to a plurality of sub-routes with additional deliveries, wherein the assignment of sub-routes with additional deliveries is based on a baseline number of packages and addresses assigned to the plurality of workers and a route difficulty, wherein the baseline number is generated for each route on a delivery worker basis;
 - generating, based on the classification characteristics, received first input, and the route difficulty, a plurality of candidate routes;
 - assigning a delivery worker to one or more groups and calculating an average deviation value of the one or more groups based on an average value of packages per worker delivery;

forwarding at least one modified delivery sub-route to an electronic device associated with the delivery worker based at least on the calculated average deviation value of the one or more groups; and
receiving information from the electronic device relating a delivery in the at least one modified delivery sub-route, wherein the information is configured to be stored as historical data.

12. The computer-implemented method for attendance assignment of claim 11, further comprising receiving, as a second input, one or more volume requests.
13. The computer-implemented method for attendance assignment of claim 12, wherein a first user input further includes a package distribution and an attendance value and a second user input further includes the one or more volume requests requesting more packages for delivery.
14. The computer-implemented method for attendance assignment of claim 11, further comprising assigning the workers to a plurality of groups with assigned efficiency rankings.
15. The computer-implemented method for attendance assignment of claim 11, wherein the baseline number assigned to the worker is generated for each route.
16. The computer-implemented method for attendance assignment of claim 11, further comprising providing additional payment for additional deliveries.
17. The computer-implemented method for attendance assignment of claim 11, wherein the efficiency characteristics of the worker corresponds to a percent of increased workload from the baseline number.

18. The computer-implemented method for attendance assignment of claim 11, wherein assigning the plurality of workers to a plurality of sub-routes with additional deliveries is further based on a density of addresses and a volume of addresses in each sub-route.
19. The computer-implemented method for attendance assignment of claim 11, wherein the method utilizes past seventy days of historical data of average addresses per hour to determine route difficulty and the baseline number.
20. A system comprising:
 - a database comprising geographical data and historical delivery data, the geographical data being stored in pre-defined regions and sub-regions;
 - an expected delivery efficiency generator implemented in software or hardware, configured to:
 - receive geographical data from a plurality of the pre-defined regions and a plurality of the sub-regions, wherein the geographical data includes at least one of landscape data, business data, residential data, parking data, or building data;
 - determine, based on the geographical data, an expected delivery efficiency, the expected delivery efficiency being measured by percentiles of addresses visited by the workers per hour (APH); and
 - calculate, based on the historical delivery data, the APH for selected individual pre-defined regions and sub-regions;
 - a cross time generator implemented in software or hardware, configured to:
 - calculate an expected time for the workers to travel between first and second regions, wherein the expected time includes a cross-region time and a sub-region time based on a median time gap or an average time; and
 - determine, based on a linear regression and the cross-region time, a driving time between the first and the second regions; and

a route generator implemented in software or hardware, configured to:

- allocate a number of workers to the groups based on a route difficulty and user input including a package distribution, an attendance value, and a volume request;
- assign a delivery worker to one or more groups and calculate an average deviation value of the one or more groups based on an average value of packages per worker delivery;
- generate delivery regions and delivery sub-regions associated with the delivery routes and the delivery sub-routes;
- combine the generated delivery regions and the generated delivery sub-regions into new delivery regions;
- forwarding at least one sub-route to an electronic device associated with the delivery worker based at least on the calculated average deviation value of the one or more groups; and
- receive information from the electronic device relating a delivery in the at least one sub-route, wherein the information is configured to be stored as historical data.