

Claims

1. A computer-implemented system for pre-assigned workers, 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, based on the retrieval, a number of packages allocated to the delivery routes and the delivery sub-routes;
 - receive data comprising groups of pre-assigned workers available for deliveries, the workers being classified into a plurality of categories;
 - compare, based on the received groups, the pre-assigned workers against the delivery routes and the delivery sub-routes;
 - assign, based on the comparison, the packages, the delivery routes, and the delivery sub-routes to the pre-assigned workers;
 - generate a plurality of candidate routes associated with the pre-assigned workers; and
 - calibrate, based on the assignment and the generated candidate routes, the delivery sub-routes.
2. The computer-implemented system for attendance assignment of claim 1, wherein the at least one processor is further configured to:
 - determine the delivery routes and the delivery sub-routes based on historical data and optimized map data.

3. The computer-implemented system for attendance assignment of claim 1, wherein the at least one processor is further configured to:
 - receive geographical data from a plurality of regions and a plurality of sub-regions, wherein the geographical data includes at least one of landscape data, business data, residential data, parking data, and 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 historical data, the APH for selected individual regions and sub-regions.
4. The computer-implemented system for attendance assignment of claim 1, wherein the at least one processor is further 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.
5. The computer-implemented system for attendance assignment of claim 1, wherein
 - the user input including a package distribution and an attendance value.
6. The computer-implemented system for attendance assignment of claim 1, wherein the at least one processor is further configured to:

determine delivery regions and delivery sub-regions associated with the delivery routes and the delivery sub-routes; and
combine the delivery regions and the delivery sub-regions into new regions for delivery.

7. The computer-implemented system for attendance assignment of claim 1, wherein the at least one processor is further configured to:

determine candidate regions and candidate delivery sub-regions associated with the candidate routes;
combine the candidate regions and the candidate delivery sub-regions into new regions for delivery; and
determine a combination of the candidate delivery regions and the candidate delivery sub-regions based on a calculated expected delivery efficiency value and a calculated cross-region time.

8. The computer-implemented system for attendance assignment of claim 1, wherein the at least one processor is further configured to:

redistribute at least one of candidate delivery regions and candidate delivery sub-regions based on the calculated expected delivery efficiency value and the calculated cross-region time.

9. The computer-implemented system for attendance assignment of claim 1, wherein the at least one processor is further configured to:

allocate the workers into at least one of the plurality of categories according to classification characteristics; and
weigh, based on the classification characteristics, the workers according to efficiency characteristics.

10. The computer-implemented system for attendance assignment of claim 1, wherein the at least one processor is further configured to:
 - receive, based on the user input, the number and the type of the workers at a graphical user interface (GUI) from at least one of a web browser or a mobile device.
11. The computer-implemented system for attendance assignment of claim 1, wherein the at least one processor is further configured to:
 - calculate an average deviation value of the groups from an average value of packages per worker delivery.
12. The computer-implemented system for attendance assignment of claim 9, wherein the classification characteristics includes at least one of experience or efficiency.
13. A computer-implemented method for pre-assigned workers, 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, based on the retrieval, a number of packages allocated to the delivery routes and the delivery sub-routes;
 - receiving data comprising groups of pre-assigned workers available for deliveries, the workers being classified into a plurality of categories;
 - comparing, based on the received groups, the pre-assigned workers against the delivery routes and the delivery sub-routes;

assigning, based on the comparison, the packages, the delivery routes, and the delivery sub-routes to the pre-assigned workers;
generating a plurality of candidate routes associated with the pre-assigned workers; and
calibrating, based on the assignment and the generated candidate routes, the delivery sub-routes.

14. The computer-implemented method of claim 13, the method further comprising:

determining the delivery routes and the delivery sub-routes based on historical data and optimized map data.

15. The computer-implemented method of claim 13, the method further comprising:

receiving geographical data from a plurality of regions and a plurality of sub-regions, wherein the geographical data includes at least one of landscape data, business data, residential data, parking data, and building data;

determining, 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

calculating, based on historical data, the APH for selected individual regions and sub-regions.

16. The computer-implemented method of claim 13, the method further comprising:

calculating 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

determining, based on a linear regression and the cross-region time, a driving time between the first and the second regions.

17. The computer-implemented method of claim 13, wherein the user input includes a package distribution and an attendance value.
18. The computer-implemented method of claim 13, the method further comprising:
 - determining delivery regions and delivery sub-regions associated with the delivery routes and the delivery sub-routes; and
 - combining the delivery regions and the delivery sub-regions into new regions for delivery.
19. The computer-implemented method of claim 13, the method comprising:
 - determining candidate regions and candidate delivery sub-regions associated with the candidate routes;
 - combine the candidate regions and the candidate delivery sub-regions into new regions for delivery; and
 - determine a combination of the candidate delivery regions and the candidate delivery sub-regions based on a calculated expected delivery efficiency value and a calculated cross-region time.