

Claims

What is claimed is:

1. An automatic delivery task assignment method for temporary delivery workers, comprising:
 - receiving a request to determine delivery tasks for temporary delivery workers from a user device;
 - retrieving delivery tasks needing assignments from a database, each delivery task associated with a delivery location and a volume of parcels;
 - determining a number of permanent delivery workers needed based on a volume of parcels associated with each delivery task;
 - retrieving permanent delivery workers and temporary delivery workers needing assignments from the database, each delivery worker associated with a feasible volume of delivery parcels;
 - assigning the retrieved permanent delivery workers to the retrieved delivery tasks; and
 - assigning the retrieved temporary delivery workers to the retrieved delivery tasks needing assignments after the permanent delivery worker assignments.
2. The method of claim 1, wherein determining a number of permanent delivery workers needed further comprises:
 - dividing a volume of parcels associated with each delivery task by a feasible volume of delivery parcels associated with a permanent delivery worker to compute a number of permanent delivery workers needed, wherein the feasible volume is identical for all permanent delivery workers; and
 - dropping a remainder from the result to determine how many temporary delivery workers are needed.
3. The method of claim 1, wherein assigning the retrieved permanent delivery workers further comprises assigning the determined number of permanent delivery workers to a delivery task.

4. The method of claim 1, wherein automatically assigning the retrieved temporary delivery workers further comprises:
 - determining a volume of remaining parcels for each delivery task after the permanent delivery worker assignments; and
 - assigning at least one retrieved temporary delivery worker to a delivery task when the calculated volume of remaining parcels of the delivery task is greater than zero.
5. The method of claim 4, wherein calculating a volume of remaining parcels after the assignment further comprises:
 - aggregating all feasible volumes of delivery parcels associated with the assigned permanent delivery workers to the delivery task; and
 - subtracting the aggregated feasible volume of delivery parcels from a volume of parcels associated with the delivery task.
6. The method of claim 4, wherein assigning at least one retrieved temporary delivery worker further comprises assigning the retrieved temporary delivery worker to a delivery task when a delivery location associated with the delivery task is within a desired delivery location associated with the temporary delivery worker.
7. The method of claim 1, further comprising removing the assigned permanent delivery workers and the assigned temporary delivery workers from the database.
8. The method of claim 1, wherein each temporary delivery worker is associated with a status of loyal, new, and rolling, and further wherein assigning the retrieved temporary delivery workers further comprises:
 - determining whether available temporary delivery workers comprise a loyal delivery worker;
 - assigning a loyal delivery worker to a delivery task when it is determined that available temporary delivery workers comprise a loyal delivery worker;

determining whether available temporary delivery workers comprise a new delivery worker when it is determined that available temporary delivery workers do not comprise a loyal delivery worker;

assigning a new delivery worker to a delivery task when it is determined that available temporary delivery workers comprise a new delivery worker;

determining whether available temporary delivery workers comprise a rolling delivery worker when it is determined that available temporary delivery workers do not comprise a new delivery worker; and

assigning a rolling delivery worker to a delivery task when it is determined that available temporary delivery workers comprise a rolling delivery worker.

9. The method of claim 1, wherein the delivery location includes one or more neighboring parcel destinations for an efficiency of assigned delivery worker.
10. An automated delivery task assignment system, comprising:
 - one or more memory devices storing instructions; and
 - one or more processors configured to execute the instructions to perform operations comprising
 - receiving a request to determine delivery tasks for temporary delivery workers from a user device;
 - retrieving delivery tasks needing assignments from a database, each delivery task associated with a delivery location and a volume of parcels;
 - determining a number of permanent delivery workers needed based on a volume of parcels associated with each delivery task;

retrieving permanent delivery workers and temporary delivery workers needing assignments from the database, each delivery worker associated with a feasible volume of delivery parcels;
assigning the retrieved permanent delivery workers to the retrieved delivery tasks; and
assigning the retrieved temporary delivery workers to the retrieved delivery tasks needing assignments after the permanent delivery worker assignments.

11. The system of claim 10, wherein determining a number of permanent delivery workers needed further comprises:
 - dividing a volume of parcels associated with each delivery task by a feasible volume of delivery parcels associated with a permanent delivery worker to compute a number of permanent delivery workers needed, wherein the feasible volume is identical for all permanent delivery workers; and
 - dropping a remainder from the result to determine how many temporary delivery workers are needed.
12. The system of claim 10, wherein assigning the retrieved permanent delivery workers further comprises assigning the determined number of permanent delivery workers to a delivery task.
13. The system of claim 10, wherein automatically assigning the retrieved temporary delivery workers further comprises:
 - determining a volume of remaining parcels for each delivery task after the permanent delivery worker assignments; and

assigning at least one retrieved temporary delivery worker to a delivery task when the calculated volume of remaining parcels of the delivery task is greater than zero.

14. The system of claim 13, wherein calculating a volume of remaining parcels after the assignment further comprises:
 - aggregating all feasible volumes of delivery parcels associated with the assigned permanent delivery workers to the delivery task; and
 - subtracting the aggregated feasible volume of delivery parcels from a volume of parcels associated with the delivery task.
15. The system of claim 13, wherein assigning at least one retrieved temporary delivery worker further comprises assigning the retrieved temporary delivery worker to a delivery task when a delivery location associated with the delivery task is within a desired delivery are associated with the temporary delivery worker.
16. The system of claim 10, further comprising removing the assigned permanent delivery workers and the assigned temporary delivery workers from the database.
17. The system of claim 10, wherein each temporary delivery worker is associated with a status of loyal, new, and rolling, and further wherein assigning the retrieved temporary delivery workers further comprises
 - determining whether available temporary delivery workers comprise a loyal delivery worker;
 - assigning a loyal delivery worker to a delivery task when it is determined that available temporary delivery workers comprise a loyal delivery worker;
 - determining whether available temporary delivery workers comprise a new delivery worker when it is determined that available temporary delivery workers do not comprise a loyal delivery worker;

assigning a new delivery worker to a delivery task when it is determined that available temporary delivery workers comprise a new delivery worker;

determining whether available temporary delivery workers comprise a rolling delivery worker when it is determined that available temporary delivery workers do not comprise a new delivery worker; and

assigning a rolling delivery worker to a delivery task when it is determined that available temporary delivery workers comprise a rolling delivery worker.

18. The system of claim 10, wherein the delivery location includes one or more neighboring parcel destinations for an efficiency of assigned delivery worker.
19. A non-transitory computer-readable medium storing instructions to execute a method by a processor to assign a delivery task automatically, the method comprising:
 - receiving a request to determine delivery tasks for temporary delivery workers from a user device;
 - retrieving delivery tasks needing assignments from a database, each delivery task associated with a delivery location and a volume of parcels, wherein the delivery location comprises one or more neighboring parcel destinations for an efficiency of delivery worker;
 - determining a number of permanent delivery workers needed based on a volume of parcels associated with each delivery task;
 - retrieving permanent delivery workers and temporary delivery workers needing assignments from the database, each delivery worker associated with a feasible volume of delivery parcels;
 - assigning the retrieved permanent delivery workers to the retrieved delivery tasks; and
 - assigning the retrieved temporary delivery workers to the retrieved delivery tasks needing assignments after the permanent delivery worker assignments.

- . 20. The non-transitory computer-readable medium of claim 19, wherein assigning the retrieved temporary workers further comprises:
 - determining a volume of remaining parcels for each delivery task after the permanent delivery worker assignments; and
 - assigning at least one retrieved temporary worker to a delivery task when the calculated volume of remaining parcels of the delivery task is greater than zero.