

ROUTE OPTIMA

From Warehouse to Doorstep: Reinventing Delivery!

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The Problem



- 1 INEFFICIENCY IN PARCEL ASSIGNMENT
- 2 MISSED (LATE/EARLY) DELIVERIES
- 3 INCREASED DELIVERY COSTS
- 4 MANUAL FLEET MANAGEMENT



Solution

1

A SMART ALGORITHM

A smart algorithm that calculates optimized routes considering time window, distance and weight constraints.

2

ADMIN PORTAL

An admin portal to optimize routes, assign parcels to riders, perform live tracking of riders and gain insights

3

RIDER'S APP

A rider app to view assignments, navigate upload receipts and gain insight of performance.



FYP-II Mid Feedback

1

INTERFACE NEEDS IMPROVEMENT

2

TECHNICAL ISSUES DURING DEMO

| | |
|----------|---|
| Decision | Ready for Job Fair |
| Comments | Good work Demo was delivered poorly. they had content on diff laptops. work is needed to make it a complete demo The work is fine to present in the job fair. Interface needs another review. |



Job Fair Feedback

1

**STRONG INTEREST SHOWN BY MANY COMPANIES LIKE
TERADATA,NAYATEL,SWIPBOX**

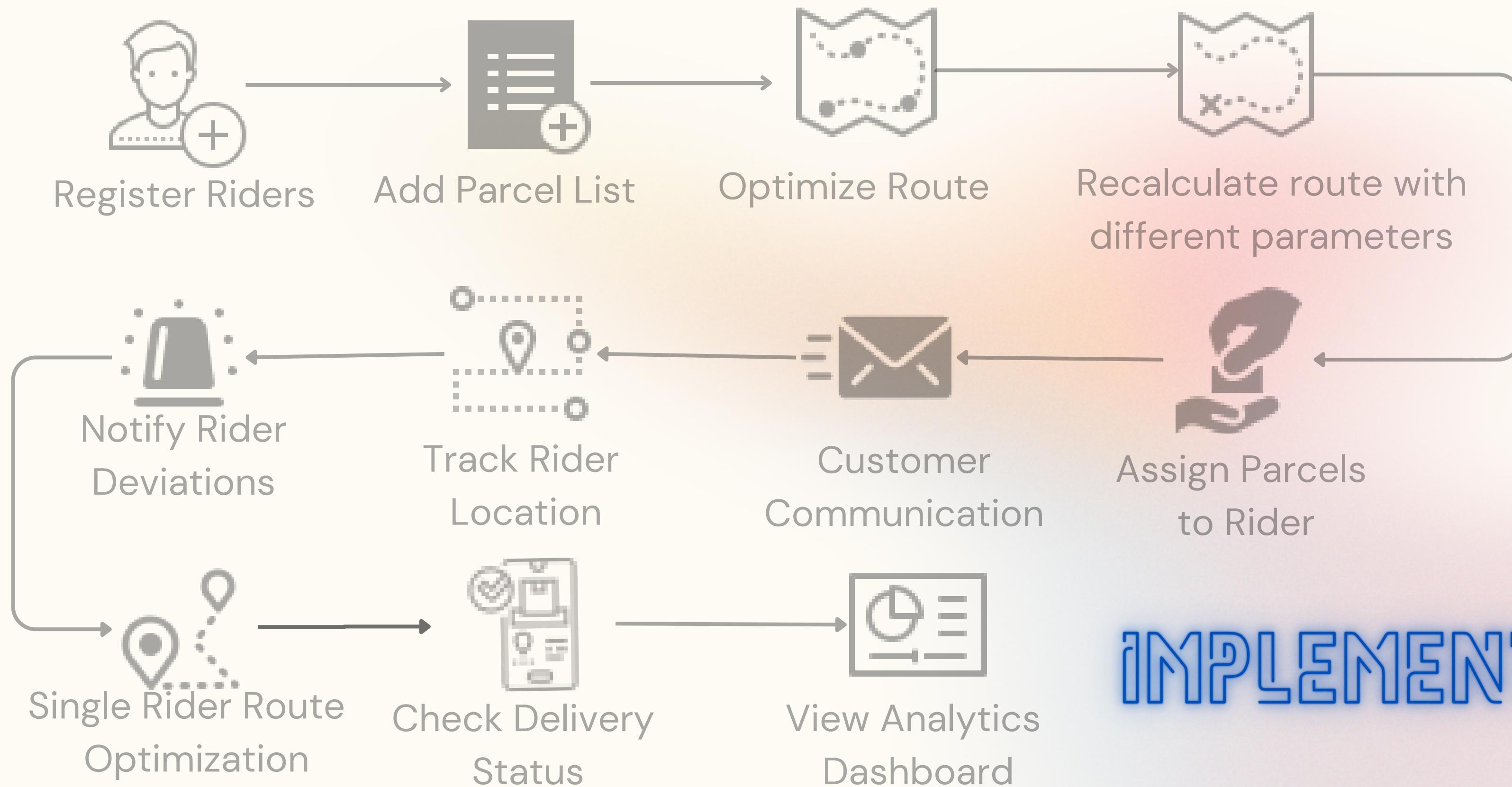
2

**TOLD US THAT IT HAS GREAT POTENTIAL AND CAN BE USED TO
SOLVE REAL WORLD PROBLEMS**

3

ADVISED US TO PITCH IT TO SME'S

Admin Portal Features



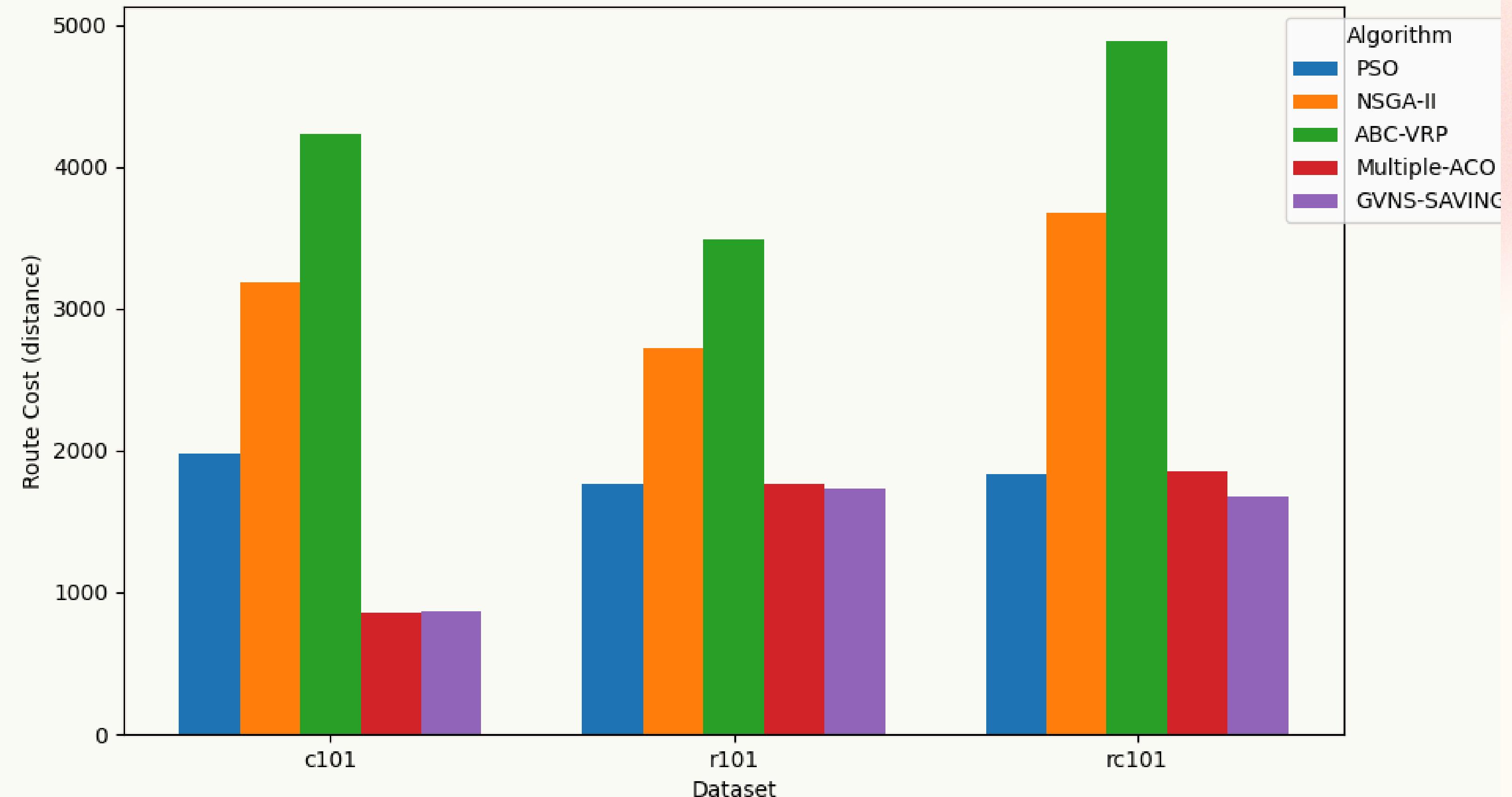
Algorithms' Evaluation

We initially selected five algorithms to evaluate their performance on the '***Solomon Benchmark***' dataset for CVRPTW Problems, aiming to identify the most promising ones.

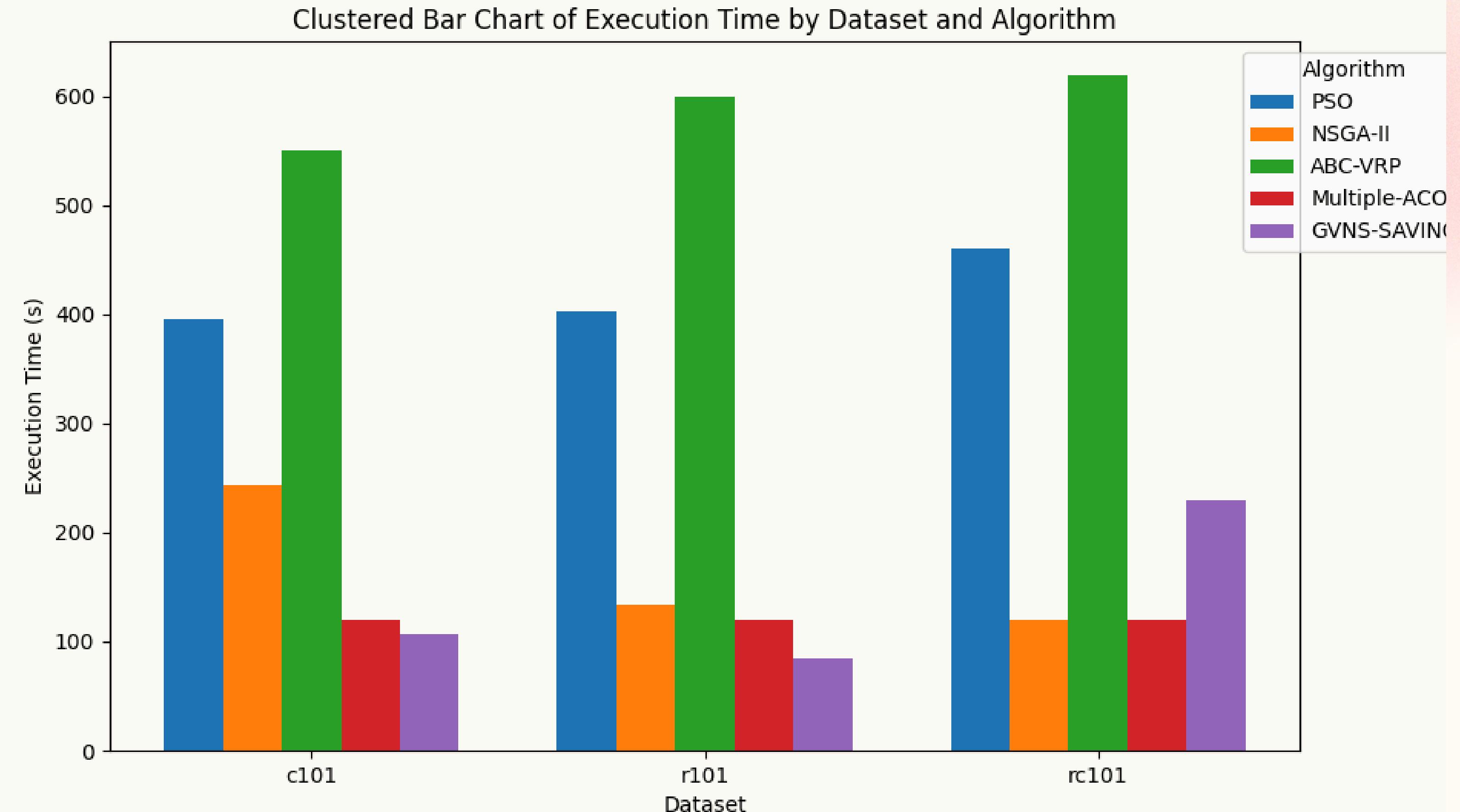
1. ***NSGA - II***
2. ***ACO***
3. ***PSO***
4. ***GVNS - SAVING***
5. ***ABC***

Algorithms' Evaluation by Cost

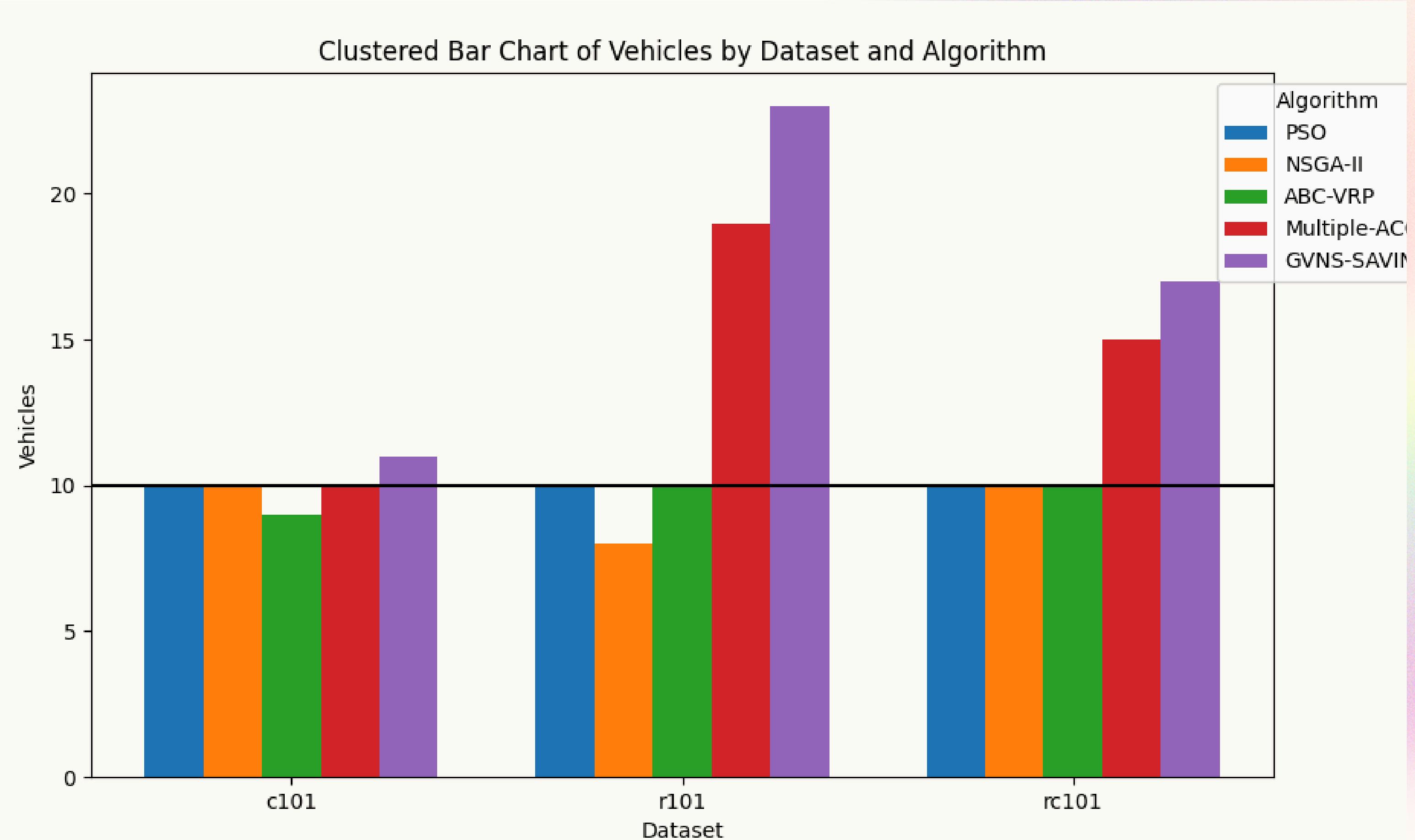
Clustered Bar Chart of Route Cost by Dataset and Algorithm



Algorithms' Evaluation by Run Time

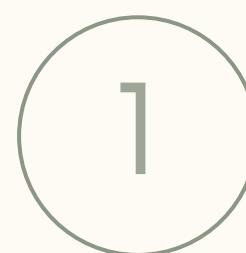


Algorithms' Evaluation by Vehicles



Custom Brute Force Implementation

In response to the complex nature of the CVRTW problem, a bespoke Brute Force Algorithm was meticulously crafted from scratch.



Self engineered to precisely match the unique requirements of our problem domain.

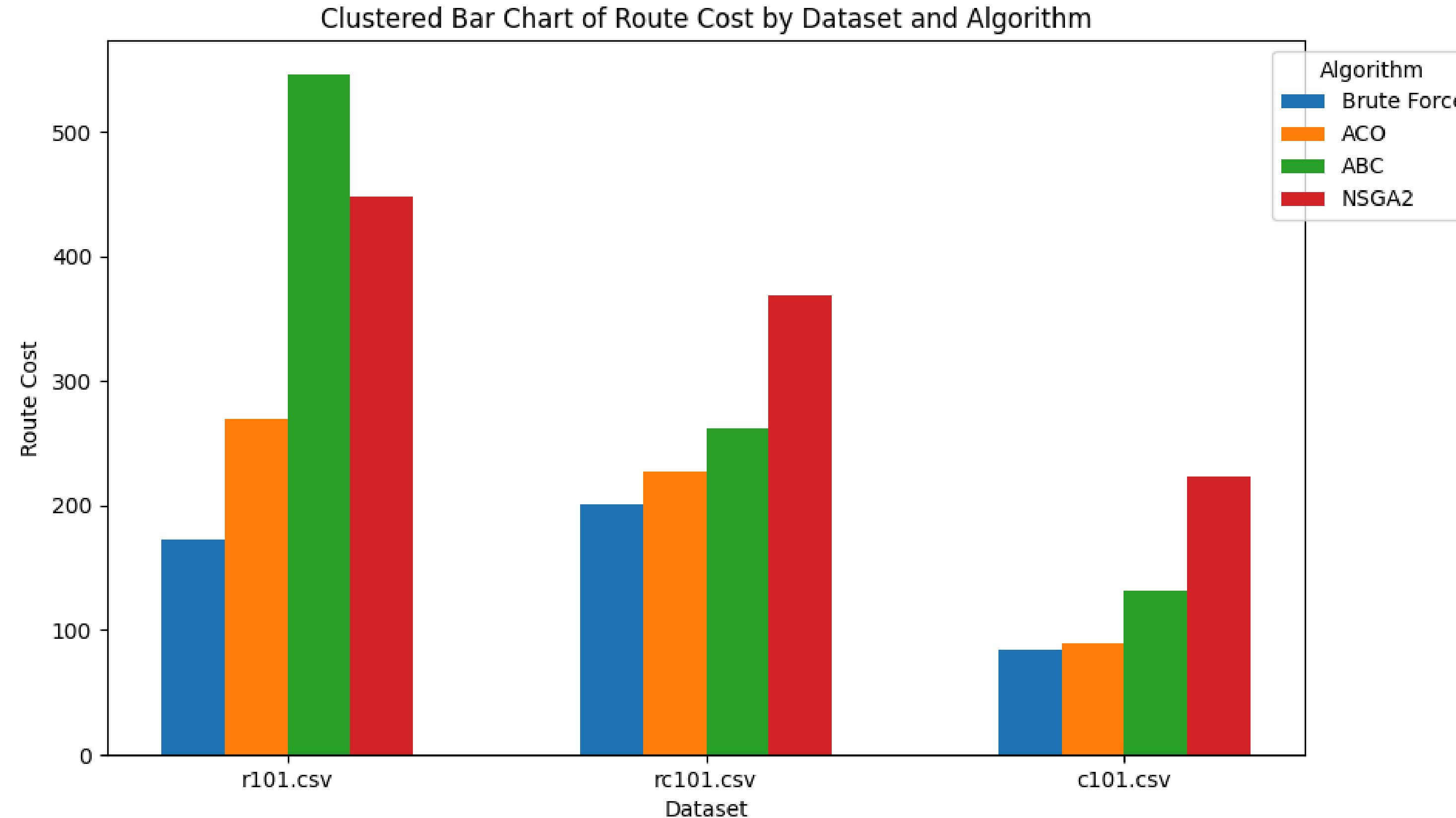


Tailored specifically to assess the effectiveness and efficiency of metaheuristic algorithms in addressing the CVRTW challenge.



Ensured robustness by addressing intricate constraints and variables inherent in our problem, providing a solid evaluation foundation.

Evaluation Alongside Brute Force

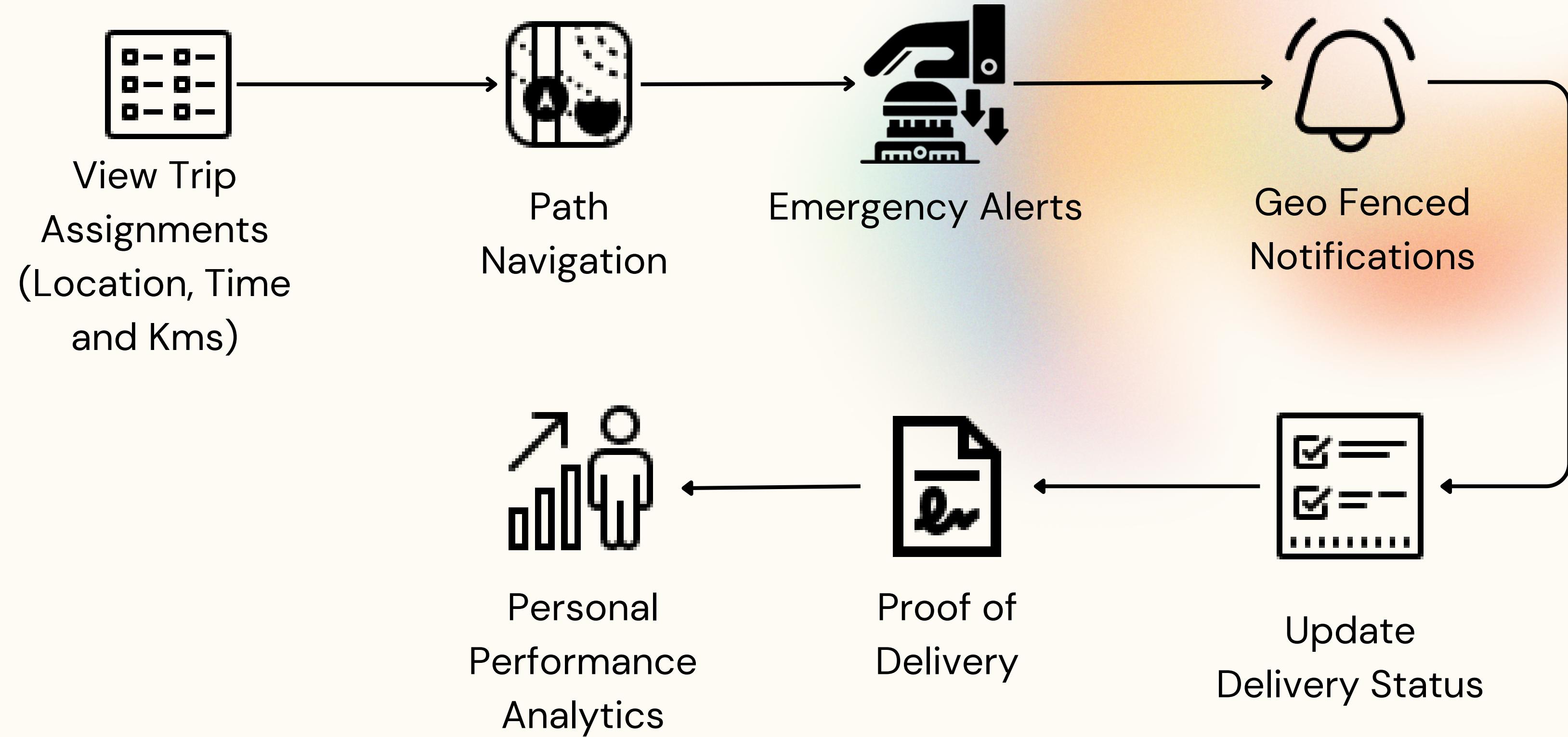


Selected Algorithms

Based on the results, we selected the following algorithm.

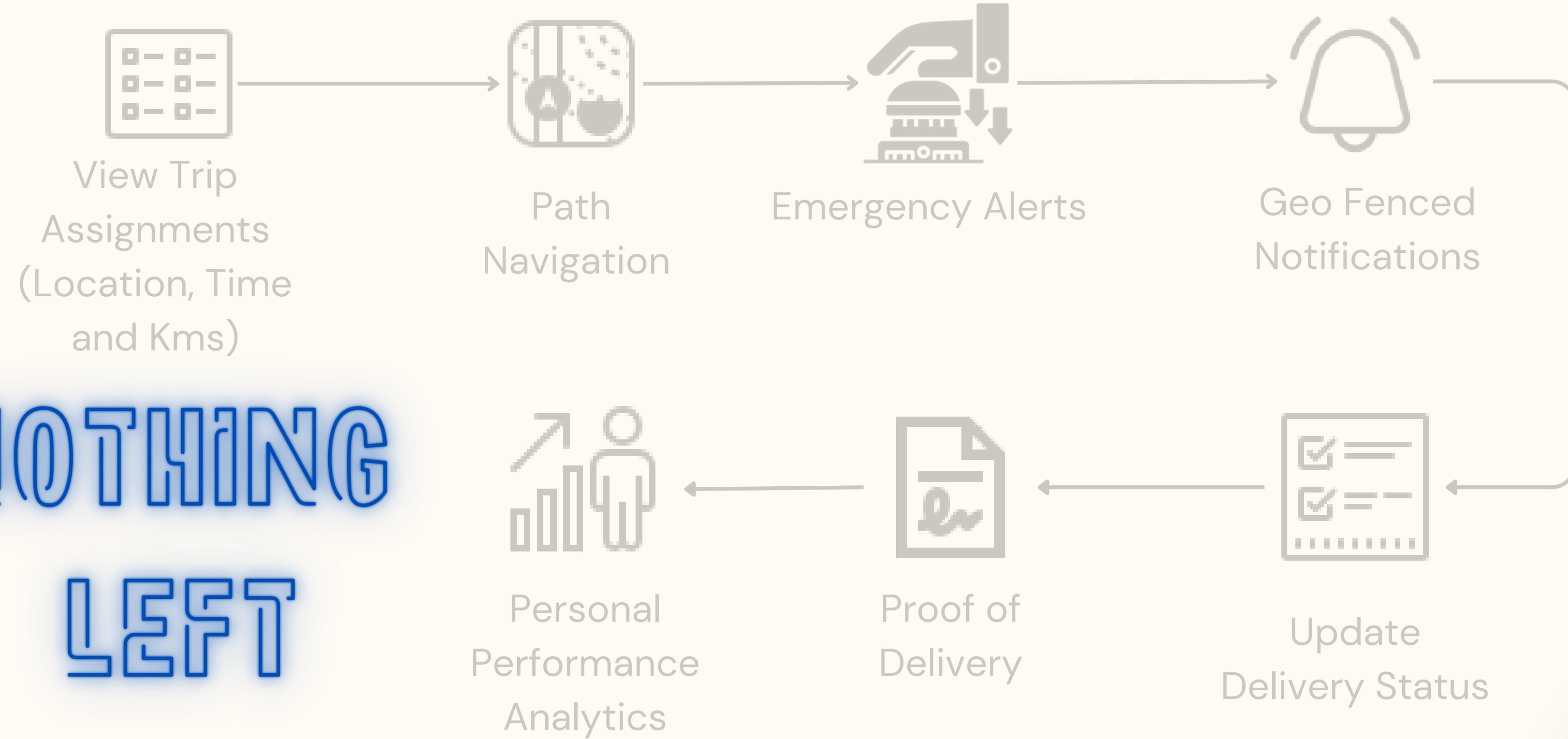
Multiple ACO

Rider App Features Proposed in Defence



Remaining Features

NOTHING
LEFT



Work Done in this Iteration

Admin Portal

- UI Improvement
- Integration testing
- Code Refactoring

Rider App

- UI Improvement
- Integration testing

Demo Session

Thank you!