

Algorithm for Routing Optimisation

IMAGES BEFORE

Stop Locations

Poorly Performant Tools

460
Stop Locations

44
Drivers

1
Warehouse
(End location for all routes)

IMAGES AFTER

Different Routes

User-Friendly Interface

Program deployed in C++

Routing Tool

PARAMETERS	
Probabilidad: Torneo 0-11	0,01
Probabilidad: Torneo 0-12	0,8
Probabilidad: Torneo 0-13	2
Probabilidad: Torneo 0-14	0,4
Probabilidad: Torneo 0-15	50
Probabilidad: Torneo 0-16	20
Probabilidad: Torneo 0-17	15
OBJECTIVE FUNCTION	
Costo de transporte	0,13
Costo de entrega	1000
Costo de tiempo	45000
Costo de combustible	57600
Costo de mantenimiento	690
Costo de otros	0,25

Problem

- Slow and manual routing process
- No visibility of the impact of the different variables

Root Causes

- Available tools are heavy and perform poorly
- Solutions dependent on one resource and his knowledge
- Little flexibility to improve solutions through adding/removing stops and drivers
- Difficulty performing sensitivity analysis to study the impact of each restriction

Solutions

- Creation of a mathematical model and algorithm to define the initial solution
- Development of a genetic algorithm (based on meta heuristics) to optimise routes
- Solutions displayed in a visual format to ease understanding
- Set-up of a user-friendly interface to guarantee successful deployment of the tool

Benefits

