

From: Rana Bhattacharjee

Sent: Friday, 17 May 2019 11:08 AM

To: Gu Zhan <zhan.gu@nus.edu.sg>; Ian Tan Eng Kiong <e0380954@u.nus.edu>; Khoo Wee Beng <e0384939@u.nus.edu>; Koh Sook Bing <e0385044@u.nus.edu>; Tan Yao Tai Teerapong <e0384248@u.nus.edu>; Yeo Whye Chung Nelson <e0385036@u.nus.edu>

Subject: Re: Reasoning Systems group project - https://github.com/IRS-RS/IRS-RS-2019-03-09-IS01PT-GRP-Thor-Petrol_Station_Route_Optimizer

Hi Sam,

I will summarize how the GA is run for the program :-

For example, the start point is A, end point is B and X,Y,Z are the intermediate points. The possible petrol stations identified for this user are P1,P2 and P3, so we have to optimise the route comprising A, B, X, Y and Z and include one of the pumps.

Step 1

We create a temporary point, T with distances 0 to A and B (this takes care of the issue that the solution start has to start with A and end with B)

Step 2

We run the GA 3 times, with the following sets

A, B, X, Y, Z, T, P1 (iteration 1)

A, B, X, Y, Z, T, P2 (iteration 2)

A, B, X, Y, Z, T, P3 (iteration 3)

For each iteration in this step, we keep track of the lengths of the top 3 shortest path options

Step 3

We choose the shortest path from Step 2, clean the list by removing T and return the answer.

So each time the GA is run, one petrol station is part of the list.

Thanks

Rana

From: Gu Zhan

Sent: Thursday, May 16, 2019 11:31:34 AM

To: Ian Tan Eng Kiong; Khoo Wee Beng; Koh Sook Bing; Rana Bhattacharjee; Tan Yao Tai Teerapong; Yeo Whye Chung Nelson

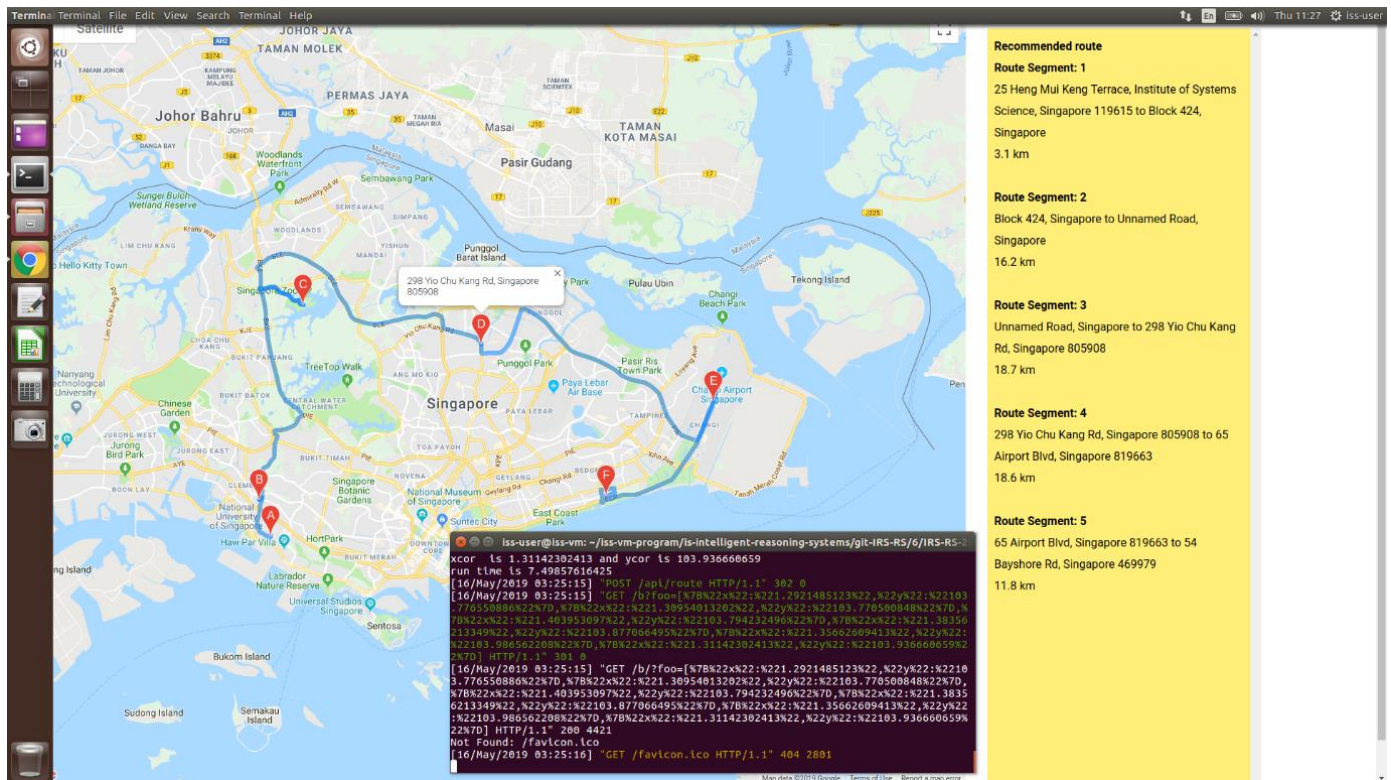
Cc: Gu Zhan

Subject: RE: Reasoning Systems group project - https://github.com/IRS-RS/IRS-RS-2019-03-09-IS01PT-GRP-Thor-Petrol_Station_Route_Optimizer

I successfully run your system, and petrol station D was added. Nice system!

A question following my previous one: is D part of GA chromosome?

If not, share with me why petrol station D was considered best one among 176 petrol stations (or a sub-set of stations for Citibank Cash-back card I used, with No Fixed Order GA)?



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Competency Framework (NICF).

From: Gu Zhan

Sent: Thursday, 16 May 2019 11:18 AM

To: Ian Tan Eng Kiong <e0380954@u.nus.edu>; Khoo Wee Beng <e0384939@u.nus.edu>; Koh Sook Bing <e0385044@u.nus.edu>; Rana Bhattacharjee <e0384809@u.nus.edu>; Tan Yao Tai Teerapong <e0384248@u.nus.edu>; Yeo Whye Chung Nelson <e0385036@u.nus.edu>

Cc: Gu Zhan <zhan.gu@nus.edu.sg>

Subject: Reasoning Systems group project - https://github.com/IRS-RS/IRS-RS-2019-03-09-IS01PT-GRP-Thor-Petrol_Station_Route_Optimizer

Hi Team,

Good job for your RS MVP. I liked the part you experimented OptaPlanner with metrics, even it's not adopted in final solution.

I'd like to understand deeper on: **how the patrol station(s) are integrated/calculated/injected into your route optimization, considering your GA chromosome covers only all destinations, but without petro station?**

def nextGeneration(currentGen, eliteSize, mutationRate):
 popRanked = rankRoutes(currentGen)
 selectionResults = selection(popRanked, eliteSize)
 matingpool = matingPool(currentGen, selectionResults)
 children = breedPopulation(matingpool, eliteSize)
 nextGeneration = mutatePopulation(children, mutationRate)
 return nextGeneration

We need a function to clean the final list by removing the temporary link node and arranging the route from the start point to the end point. This is done by the clean_list function.

We finally run the algorithm for all the intermediate points, including the starting point and the ending point. There is a set of possible petrol stations, so we run this for each petrol station, one at the time and keep track of the 3 shortest paths for each, which are finally compared to provide the top 3 results.

PETROL STATION ROUTE OPTIMIZER

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Competency Framework (NICF).

