GUJARAT TECHNOLOGICAL UNIVERSITY

(GTU)

INNOVATION COUNCIL (GIC)

Patent Search & Analysis Report

(PSAR)

Date of Submission : 19/10/2020

Dear **Dave Maunish Manishbhai,**

Studied Patent Number for generation of PSAR	:	**20BE7_170130107020_3**

PART 1: PATENT SEARCH DATABASE USED

1. Patent Search Database used	:	Google Patents
Web link of database	:	https://patents.google.com/
2. Keywords Used for Search	:	Traffic ,management system ,refinforcement learning,deep learning
3. Search String Used	:	traffic management system using reinforement learning
4. Number of Results/Hits getting	:	10

PART 2: BASIC DATA OF PATENTED INVENTION /BIBLIOGRAPHIC DATA

5. Category/ Field of Invention	:	
6. Invention is Related to/Class of Invention	:	TRAFFIC CONTROL SYSTEMS
6 (a) : IPC class of the studied patent	:	G08G1/081
7. Title of Invention	:	Multi-agent reinforcement learning for integrated and networked adaptive traffic signal control
8. Patent No.	:	CA2859049A1
9. Application Number	:	CA 2012/050887
9 (a) : Web link of the studied patent	:	https://patents.google.com/patent/CA2859049A1/en?oq=reinforcement+learning+for+traffic+lights+management
10. Date of Filing/Application (DD/MM/YYYY)	:	12/10/2012
11. Priority Date (DD/MM/YYYY)	:	
12. Publication/Journal Number	:	
13. Publication Date (DD/MM/YYYY)	:	
14. First Filled Country : Albania	:	

15. Also Published as

Sr.No	Country Where Filled	Application No./Patent No.
1		

16. Inventor/s Details.

Sr.No	Name of Inventor	Address/City/Country of Inventor
1	samah El Tantawy	canada
2	Baherr Abdulhai	Canada

17. Applicant/Assignee Details.

Sr.No	Name of Applicant/Assignee	Address/City/Country of Applicant
1	PRAGMATEK TRANSPORT INNOVATIONS Inc	Canada

18. Applicant for Patent is : Company

PART 3: TECHNICAL PART OF PATENTED INVENTION

19. Limitation of Prior Technology / Art

Limitation of the technology is it does not use deep learning as the backbone it uses Q-table which is not as advance method.
and other thing is it uses individual agents at each traffic signal instead they should use a single agent which can control all traffic signals.

20. Specific Problem Solved / Objective of Invention

Objective of the invention is to reduce the amount of time a vehicle has to wait on the traffic lights.

21. Brief about Invention

A system and method of multi-agent reinforcement learning for integrated and networked adaptive traffic controllers (MARLIN-ATC). Agents linked to traffic signals generate control actions for an optimal control policy based on traffic conditions at the intersection and one or more other intersections. The agent provides a control action considering the control policy for the intersection and one or more neighbouring intersections. Due to the cascading effect of the system, each agent implicitly considers the whole traffic environment, which results in an overall optimized control policy.

22. Key learning Points

Reinforcement learning could help us to make a system which allows us to create a system which reduces the amount of time vehicle has to wait on signal.

23. Summary of Invention

To create a multi-agent traffic controller which create a optimal policy for the network which reduces the traffic jams, and waiting time. Agent makes the decision based on the traffic at the intersection. and agent also communicates with other agent to make decision which creates an overall optimal policy for the decision process.

24. Number of Claims : 20

25. Patent Status : Published Application

26. How much this invention is related with your IDP/UDP?

71 to 90%

27. Do you have any idea to do anything around the said invention to improve it? (Give short note in not more than 500 words)

Invention could be improved if deep learning is used instead of q-table.