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A Decentralized Approach for Anticipatory Vehicle Routing Using Deligate Multiagent System

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***Abstract*: Advanced vehicle steerage systems use time period traffic data to route traffic and to avoid congestion. Unfortunately, these systems will solely react upon the presence of traffic jams and to not stop the creation of reserve congestion.**

This paper presents a redistributed approach for prevenient vehicle routing that's significantly helpful in large-scale dynamic environments.

***Keywords*: MANETs, Bandwidth.**

1. Introduction

Usually the demand for mobility arises due to increase in population rate. During the last years the burden caused by growth of traffic intensity and frequency of traffic jams on major roads, highways and in urban areas has been stigmatized. A traffic-jam is a dynamic phenomenon in which every motorist is slowed down by his predecessor. Route steerage in transport roadways has become a crucial and rising technique of congestion alleviation. Many traffic networks around the world have experienced a growing rise in commuting time due to increasing levels of traffic. The increased seen in many major cities represents a serious problem for roadway operators and commuters everybody.

People use vehicles to go places using the road infrastructure. The large number of current vehicles and the limited capacity of the road networks make routing traffic a particularly challenging problem.

A. Objective of the study

- The main objective of this project is to overcome the challenges which occurred during forecast information and also to help drivers to reach their destination faster compared with other drivers who use other services.
- In general terms, our main focus is to design a flexible, and, at the same time, robust traffic routing algorithm that will support self-interested agents in the context of dynamic network traffic conditions. information.

B. Vehicle routing module

This module has several layers representing road / street layout, routes collection, infrastructure agent placement, landmarks, etc. All information related to this layers will have picked up from map plotter module.

C. Infrastructure agents & sensor communication module

Application has to make a car run as well render/ listen various events like triggering infrastructure agent, message communication, mouse click, button click, etc., Separate event handling mechanism has to be coded to cater the need.

D. Jade container communication services

As a part of JADE integration, all GUI events have to be delegated to JADE. This module acts an interface between GUI and JADE making it possible to pass on all messages.

E. Vehicle routing storage module

To plot road/ street, route, sensor, etc., Several data has to be collected from the user. To store /load and update this information, a module will be coded in a way it makes very convenient both for application and for the user to use the data.

F. Source code

map plotter

```
package com.vehiclerouting.plotter.main;
import java.awt.BorderLayout;
import java.awt.Container;
import java.awt.Dimension;
import java.awt.Point;
import java.awt.Rectangle;
import java.awt.Toolkit;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.awt.event.ItemEvent;
import java.awt.event.ItemListener;
import java.awt.event.MouseAdapter;
import java.awt.event.MouseEvent;
```

```
import java.io.FileOutputStream;
import java.io.IOException;
import java.util.ArrayList;
import java.util.HashMap;
import java.util.Map;
import java.util.Properties;
import java.util.Set;
import javax.swing.JButton;
import javax.swing.JComboBox;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JOptionPane;
import javax.swing.JPanel;
import javax.swing.JScrollPane;
import javax.swing.JSplitPane;
import javax.swing.JTabbedPane;
import com.vehiclerouting.plotter.components.*;
public class MapPlotter extends JFrame implements
ActionListener{
ArrayList<Point> roadQrds = new ArrayList<Point>();
JButton storeRoads, drawRoad, storeRoutes, drawRoute,
storeLM;
JComboBox combo;
AreaMapPanel mapPanel;
AutoMapPlotter plotterPanel;
RoutePlotter routePanel;
JTabbedPane tab;
HashMap<String,Rectangle> roadInfo = new
HashMap<String,Rectangle>();
HashMap<String,ArrayList<Point>> routeInfo = new
HashMap<String,ArrayList<Point>>();
HashMap<String,ArrayList<Point>> landMarkInfo = new
HashMap<String,ArrayList<Point>>();
public static int USER_STORING_OPTION = 1;
public MapPlotter(){
this.setTitle("Map Plotter");
Dimension screenDim =
Toolkit.getDefaultToolkit().getScreenSize();
this.setSize(screenDim.width,screenDim.height-25);
Container container = this.getContentPane();
container.setLayout(new BorderLayout());
tab = new JTabbedPane();
mapPanel = new AreaMapPanel();
tab.addTab("Original Map",mapPanel);
plotterPanel = new AutoMapPlotter();
tab.addTab("Map Plotter",plotterPanel);
routePanel = new RoutePlotter();
tab.addTab("Route Plotter",routePanel);
//tab.setMinimumSize(new Dimension(1250, 900));
//tab.setPreferredSize(new Dimension(1250, 900));
JScrollPane mainPane = new JScrollPane(tab);
```

2. Conclusion

In this paper, we have described a routing strategy for anticipatory vehicle routing using delegate MAS's. This routing strategy can more efficiently route vehicles by using forecast information. This anticipatory vehicle information is collected and distributed in a decentralized fashion, unlike other approaches that involve forecast information, where collection and distribution of information is performed as a central service. The distributed nature of this approach fits the distributed nature of the traffic domain and ensures that scalability, quantifiability, measurability needs will additional simply be met than in centralized systems.

References

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