CARBON FOOTPRINT CALCULATION AND VEHICULAR ROUTE OPTIMISATION

Enrollment No. (s) - 15104024, 15104048, 15104054
Name of Student (s) - Shivam Kapoor, Pulkit Jain, Shriya Juneja
Name of supervisor(s) - Dr. Prakash Kumar

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Submitted in partial fulfillment of the Degree of
Bachelor of Technology

In

Information Technology

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING & INFORMATION TECHNOLOGY

JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY, NOIDA

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DECLARATION

We hereby declare that this submission is our own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgment has been made in the text.

Place: Noida Signature:

Date: December 10, 2018 Name: Shivam Kapoor, Pulkit Jain, Shriya Juneja

Enrollment No: 15104024, 15104048, 15104054

CERTIFICATE

This is to certify that the work titled "**CARBON FOOTPRINT CALCULATION AND VEHICULAR ROUTE OPTIMISTION**" submitted by "**Shivam Kapoor, Pulkit Jain and Shriya Juneja**" in partial fulfillment for the award of degree of B.Tech of Jaypee Institute of Information Technology, Noida has been carried out under my supervision. This work has not been submitted partially or wholly to any other University or Institute for the award of this or any other degree or diploma.

Signature of Supervisor ……..

Name of Supervisor ……..

Designation ……..

Date ……..

ACKNOWLEDGEMENT

Before we describe in brief about our project, we would like to add a few heartfelt words for the people who were very much helpful for us in developing this project.

We would like to thank our teaching staff of Jaypee Institute of Information Technology who have contributed greatly to the success of this project. First of all, we would like to express our sincere thanks to **Dr. Prakash Kumar**.

"Action is very necessary to convert our Dream in the Reality". Our dream is to develop the project "C-Calc", to make a project successful, one needs help, understanding and co-ordination from all those who are directly or indirectly involved in this.

Signature of the Student : _____

Name of Student : Shivam Kapoor, Pulkit Jain, Shriya Juneja

Enrollment Number : 15104024, 15104048, 15104054

Date : December 11, 2018

SUMMARY

Overall description of the project

1. Carbon footprint Calculation

First part of the project aims to calculate carbon emission level for day to day activities by developing a carbon footprint calculator to determine the amount of carbon emitted in kg per activity. Various modules of this project will track your daily activities like daily emission of carbon dioxide in transportation and electricity consumption. User can add type of transportation method it takes, if it walks or ride a bicycle , consumption will be 0, if it travels by bus or takes a train carbon emissions are calculated accordingly and if it uses car in that case we have supplied it with a dense database of cars of different manufactures and different models , from where user can select the model and for each model unique value of carbon consumption will be provided, that is user can add a journey containing transportation mode(bike/walk, bus, skytrain or car), car specifications, route and date which will be saved, and route information includes number of km travelled in city and highway, carbon emission in city will be more than that in highway because of traffic, similarly for utilities, with the help of electricity/natural gas bill power consumed in kilowatts is calculated and with the combination of number of persons and few other factors carbon emission is calculated. Users can see their daily, monthly or yearly emissions in the form of graphs. When a journey is recorded, a tip is given to help users to reduce CO2 emissions. Later this project aims to give suggestions to reduce The carbon emission level through better selection of transportation route with less traffic, moreover we aim to calculate number of trees equivalent to neutralize the amount of C02 emitted so that a person can plant equal number of trees and do less harm to environment.

2. Vehicular Route Optimisation

Back in the days when salesmen travelled door-to-door hawking vacuums and encyclopaedias, they had to plan their routes, from house to house or city to city. The shorter the route, the better. Finding the shortest route that visits a set of locations is an exponentially difficult problem: finding the shortest path for 20 cities is much more than twice as hard as 10 cities.

An exhaustive search of all possible paths would be guaranteed to find the shortest, but is computationally intractable for all but small sets of locations. For larger problems, optimization techniques are needed to intelligently search the solution space and find near-optimal solutions.

To solve the above travelling salesman problem we try to apply different efficient algorithm rather than exhaustive search mainly Genetic algorithm, Hill climbing and Simulated annealing. Result from all these algorithm is been computed and the best is shown to the user using an android application interface in tabular form.