Proposal

For

Third Year Project

Gyalpozhing College of Information Technology

Bachelor of Science in Information Technology

Used Car Price Prediction

Submitted by

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Read carefully before filling the form.

1. Please do not alter the layout of the application form. Information must be filled in the spaces provided, under set format.
2. Guidance notes in various fields should not be deleted.
3. Required information should be duly filled in the specified fields.

Guidelines and Forms

Submission Procedure

Duly filled proposal forms completed in all respects should be submitted in form of soft copy in the VLE. On receipt of the applications the proposals will be evaluated by the examiner and proposals would then be defended by student groups. The project group may need to revise the proposal in light of the examiner's recommendations.

For further information, please contact:

Module Coordinator

Tshering
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Application for the Project

1. Project Identification

1.1 **Reference Number:**

2022_PRJ303_01(Year_Module_groupNo)

(for office use only)

1.2 **Problem statement**

*(Please refer **here** on how to write a problem statement.)*

With economic conditions, there is a global increase in sales of used cars. Determining the price of a used car is a major problem since it involves expert knowledge as the price usually depends on many distinctive features and factors. It is difficult for customers who plan to purchase a used car as there is no appropriate way to identify its fair price. Therefore, there is a need for an accurate price prediction system for used cars which helps customers greatly in making an informed decision about buying a used car.

1.3 **Project Title:**

(Provide a concise, accurate and informative title which immediately orientates your reader to the focus of your project.)

Used Car Price Prediction

1.4 **Key Words:**

(Please provide a maximum of 5 key words that describe the project. The key words will be incorporated in our database.)

Used car price, Prediction, Machine Learning, Predictive model

1.5 **Project Guide:**

Name:

Designation:

Mobile # : Tel. # :

Email:

1.4.1. Project examiner 1:

Name:	
Designation:	
Mobile # :	Tel. # :
Email:	

1.4.2. Project examiner 2:

Name:	
Designation:	
Mobile # :	Mobile # :
Email:	

1.6 **Project Duration:**

Starting Date:	March 14, 2022
Completion Date:	June 7, 2022

2. Aims, Goals, Objectives and scope of the Project

2.1 Aims of the Project:

The aim of the project is to develop a system for predicting the price of used cars quickly and accurately.

2.2 Goals of the Project:

The goal of the project is to build a predictive system for customers to predict the price of used cars.

2.3 Objectives of the Project:

- To provide an accurate price prediction system for used cars.
- To effectively determine the worthiness of a used car by studying a variety of distinctive features and factors.

2.4 Scope of the Project:

The project is capable of using different features and factors to predict the used car price. It targets those customers who want to estimate the used car price to purchase it.

3. Project features

3.1 Background

(Explains why you are doing the project. It provides a brief overview of the background to the project and establishes a particular area, or problem, that needs to be investigated further. It provides a clear statement of the topic of the proposed work.)

With economic conditions, the number of cars increases and there is also a rise in sales of used cars. Predicting the price of used cars is an important and popular problem. Only with the help of experts and their corresponding knowledge, predictions for car prices were achieved. However, the way of prediction by the experts was not enough to identify the fair price of the used cars. It is also difficult for customers who plan to purchase a used car as there is no appropriate way to estimate the price of the car.

While predicting the price of used cars, it depends on entirely different features and factors. The most significant features are year, gear type, owner type and also kilometer driven plays the major role for predicting the price of used car. The most popular ingredient for a car is type of fuel and the volume of fuel in which it consumes for each mile. The price of fuel is also considered due to its frequent price changes.

Determining the price of a used car is a challenging task, due to the many factors that drive a used car's price on the market. The focus of this project is to develop a machine learning model that can accurately predict the price of a used car based on its features, in order to make informed purchases by customers.

3.2 Literature Review:

(Detailed review of what all has been done internationally in the proposed area quoting references and bibliography. This section demonstrates the evolution of Technology, the depth of the project team literature search and builds the confidence of the evaluators about capability of the team in achieving the stated objectives.)

In the paper titled "An expert system of price forecasting for used cars using adaptive neuro-fuzzy inference" by Wu and his friends have used neuro fuzzy knowledge based systems to demonstrate vehicle price prediction. By considering the following attributes such as brand, year of production and type of engine, they predicted a model which has similar results as the simple regression model. Moreover, they made an expert system named ODAV (Optimal Distribution of Auction Vehicles) as there is a high demand for selling the vehicles at the end of the leasing year by vehicle dealers. The system gives insights into the best prices for

vehicles, as well as the location where the best price can be gained. To predict a price of vehicles, the K-nearest neighbor machine learning algorithm has been used which is based on regression models. More number of vehicles have been exchanged through this system so this particular system is more successfully managed.

The paper titled “Predicting the price of used cars using machine learning techniques” by Pudaruth has done the predictions of vehicle price from the historical data that has been collected from daily newspapers. He has used supervised machine learning techniques for predicting the price of vehicles. Many other algorithms such as multiple linear regression, k-nearest neighbor algorithms, naïve bayes and some decision tree algorithms have also been used. All the four algorithms are compared and found the best algorithm for prediction. They have faced some difficulties in comparing the algorithms, somehow they have managed.

According to the research paper by Venkatasubbu and Ganesh in 2019, they have concentrated on the relation between seller and buyer of used cars. In order to predict the price of four wheelers, more features were required such as the given price, mileage, model, trim, type, cylinder, liter, doors, cruise, sound of used cars. Using these features, the price of used vehicles has been predicted with the help of statistical analysis systems for exploratory data analysis.

3.3 Requirements

a. Functional Requirement:

This model predicts the used car price based on some factors such as year, gear type, owner type, kilometer driven and fuel type.

b. Non-Functional Requirement:

- Usability: It is user-friendly as any user can use this system to predict the used car price whenever they want to.
- Portability: The system will be able to coexist with another system in the same environment and can be used in different platforms.
- Speed: This model predicts the car price within a few seconds. So, it is fast enough.

3.4 Technology

The software technologies that will be used for the system are as follows:

- Python: Python is a high-level, general-purpose programming language designed by Guido Van Rossum to write clear, logical code for small and large scale projects.
- Pandas: Pandas is a python package which is flexible and easy to use, open source data analysis and manipulation tool.
- Google Colab: Google Research's Collaboratory or "Colab" for short, is a web-based platform for developing machine learning models.
- Heroku: Heroku is a platform to deploy, manage and scale applications entirely in the cloud.
- Visual studio code: Visual Studio Code (VS Code) is a free open source text editor by Microsoft for building applications.

The hardware technologies that will be used for the system are as follows:

- Laptop with 8GB RAM minimum, 16GB RAM recommended

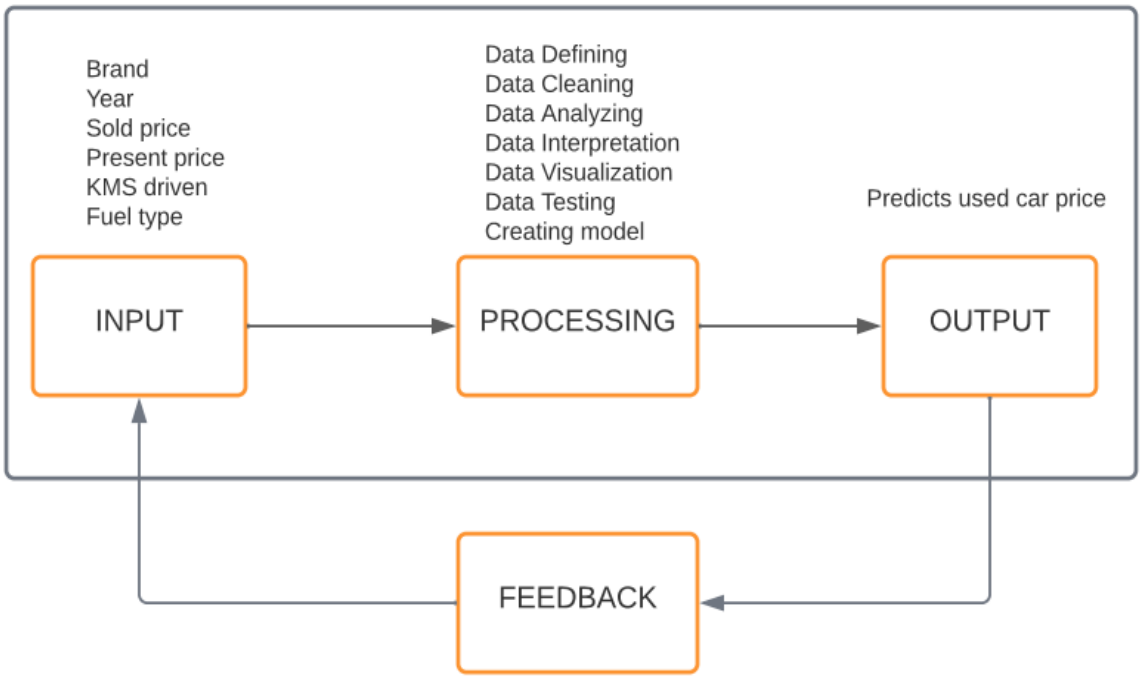
3.5 System Architecture

3.5.1 System Design

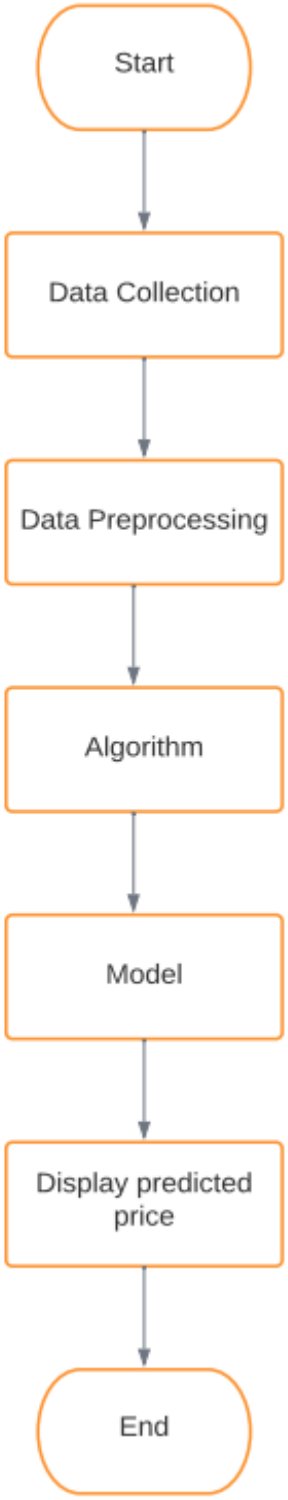
This system is a two-tier architecture which consists of two logical and physical computing layers: Presentation tier and Application tier.

The presentation tier is a user interface and communication layer of the application. Here, the user first inputs the year, fuel type, owner type, KMS driven and gear type, then the result of predicted car price is displayed to the user.

The application tier is also called the logic tier or middle tier. After inserting the required information of the used car, it is then processed where the prediction of used car price takes place.



3.5.2 Workflow



3.6 Deployment

The project will be made available to the user in the form of a website when the data has been analyzed. The project will be deployed on Heroku platform once it has been completed.

4 Team Members Role

4.1 **Member 1 Name and Role**

Team Leader- Karma Yangzom

4.2 **Member 2 Name and Role**

Lead Programmer- Kinzang Dorji

4.3 **Member 3 Name and Role**

Database Designer- Sonam Choki

4.4 **Member 4 Name and Role**

UI/UX Designer- Nima Gyeltshen

5. Examiner Comments

6. Project Schedule / Milestone Chart /Work plan

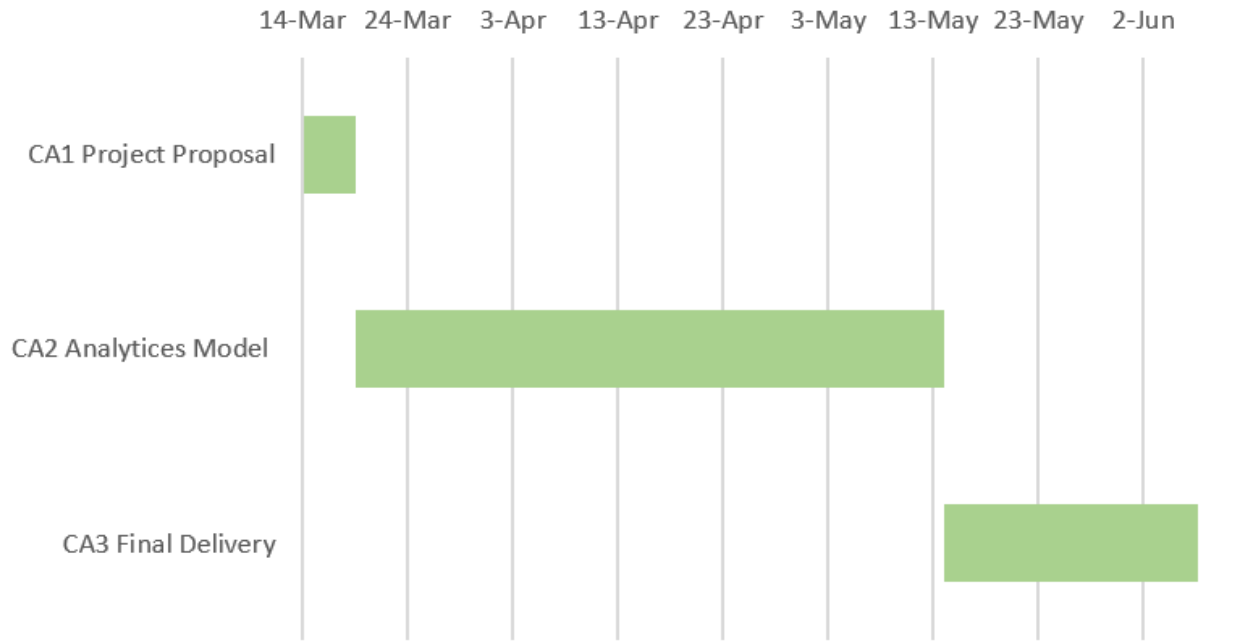
[describes what you will do. It is a plan of the tasks which will enable you to achieve the stated aims of your project. To devise a plan, you need to break the project down into a series of steps or stages, and you then outline the tasks within each stage. The project plan should also include a timetable in which you plan the timing for the main tasks. This timetable can help to keep you on track throughout the project. The plan may also include a list of the resources required to do the project.]

(Project schedule using MS-Project (or similar tools) with all tasks, deliverables, milestones, clearly indicated are preferred. Task should be measured in terms of hours)

Table 1: Project schedule

Sl. No	Assignment Title	Duration	Start Date	End Date
1	CA1 Project Proposal	5	14-Mar	18-Mar
2	CA2 Analytices Model	56	19-Mar	13-May
3	CA3 Final Delivery	54	14-May	7-Jun

Fig 1: Gantt chart



7. Bibliography

Gegic, E., Isakovic, B., Keco, D., Masetic, Z., & Kevric, J. (2019). Car price prediction using machine learning techniques. *TEM Journal*, *8*(1), 113.

Pudaruth, S. (2014). Predicting the price of used cars using machine learning techniques. *Int. J. Inf. Comput. Technol*, *4*(7), 753-764.

Venkatasubbu, P., & Ganesh, M. (2019). Used Cars Price Prediction using Supervised Learning Techniques. *Int. J. Eng. Adv. Technol.(IJEAT)*, *9*(1S3).

Wu, J. D., Hsu, C. C., & Chen, H. C. (2009). An expert system of price forecasting for used cars using adaptive neuro-fuzzy inference. *Expert Systems with Applications*, *36*(4), 7809-7817.