PROJECT: IE7275-Data Mining

In-Vehicle Coupon Recommendation using Classification Models

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Introduction

Businesses in the retail and service industries rely heavily on promotional coupons to attract customers and increase sales. However, ineffective targeting often results in low coupon acceptance rates, wasted marketing resources, and reduced return on investment.

To improve campaign effectiveness, companies need methods to predict whether a customer is likely to accept a coupon in a given context.

This project focuses on the In-Vehicle Coupon Recommendation dataset (UCI Machine Learning Repository, 2020). This data was collected via a survey on Amazon Mechanical Turk, which contains responses from 12,684 participants with 25 features. These features describe driving scenarios such as weather, time of day, passenger type, and destination, and whether the driver accepts a coupon.

Problem Statement

Coupon acceptance can be predicted based on contextual features such as time of day, passenger type, and driving destination.

This study will apply classification methods such as Logistic Regression, Decision Trees, Random Forest, and Gradient Boosting to model coupon acceptance behaviour. The models will be evaluated using accuracy, precision, recall, and F1-score. Additionally, feature importance analysis will highlight the most influential factors affecting coupon acceptance.

An effective coupon recommendation system can significantly improve marketing ROI by:

-Delivering coupons to the right customers at the right time.
-Increasing acceptance rates and customer segmentation
-Reducing wasted promotional spending
-Enabling data-driven personalization strategies for advertisers and retailers.