

Coupon Purchase Prediction

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Background & Objectives

- Ponpare is a Japanese leading joint coupon site.
- Predicting future transaction based on customers profile information and the features of the coupons they have seen.

The screenshot shows the Ponpare website interface. A red box labeled "Area" points to the location selection menu at the top, which lists various Japanese regions like 全国 (All Japan), 関西 (Kansai), 東北 (Tohoku), etc. Another red box labeled "[Category]" points to the category filter on the right, which includes Food, Restaurants, Leisure, Beauty salons, Lessons, and Products. A third red box labeled "Discount Price" points to a promotional banner for HANABISHI suits, showing a 50% discount from ¥25,500 to ¥12,750.

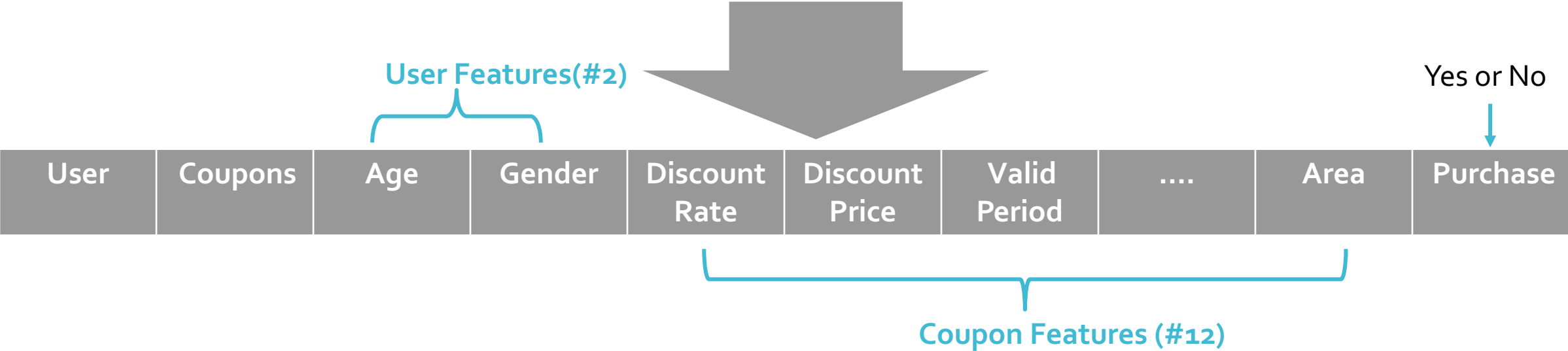
Area

[Category]
Food
Restaurants
Leisure
Beauty salons
Lessons
Products

Discount Price

Database:

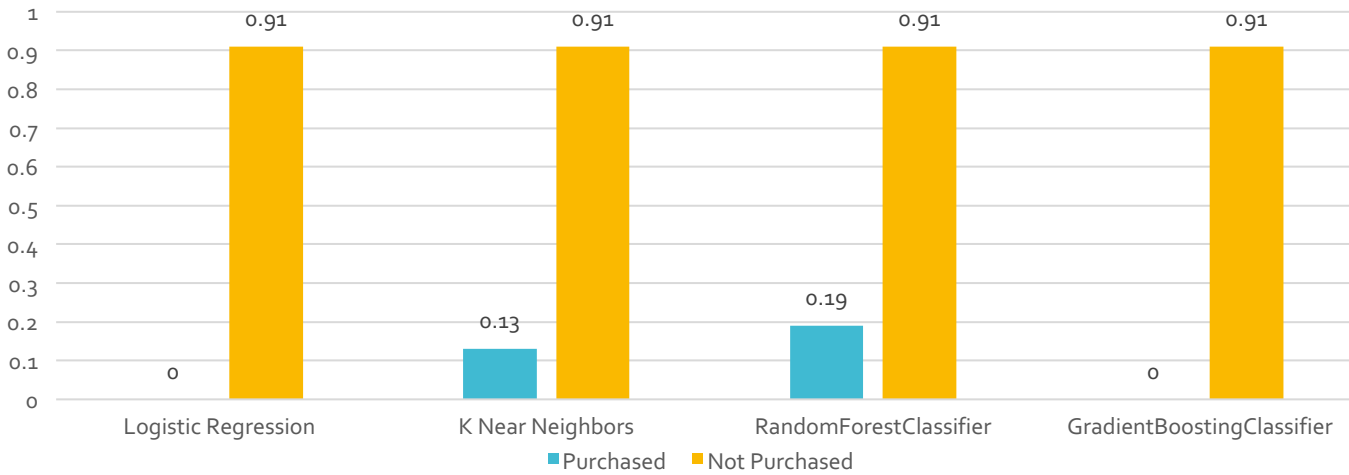
1. User Browsing Data: User, Viewed Coupons	2. User Purchasing Data: User, Purchased Coupons	3. Coupon Features: Discount Rate(%), Discounted Price(%), Valid Period, Dates(Weekday? Weekend?) Coupon Type, Area ...	4. User Information: Age Gender
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Preparation

Results

F1 Score-Full Datasets



Dataset Size:

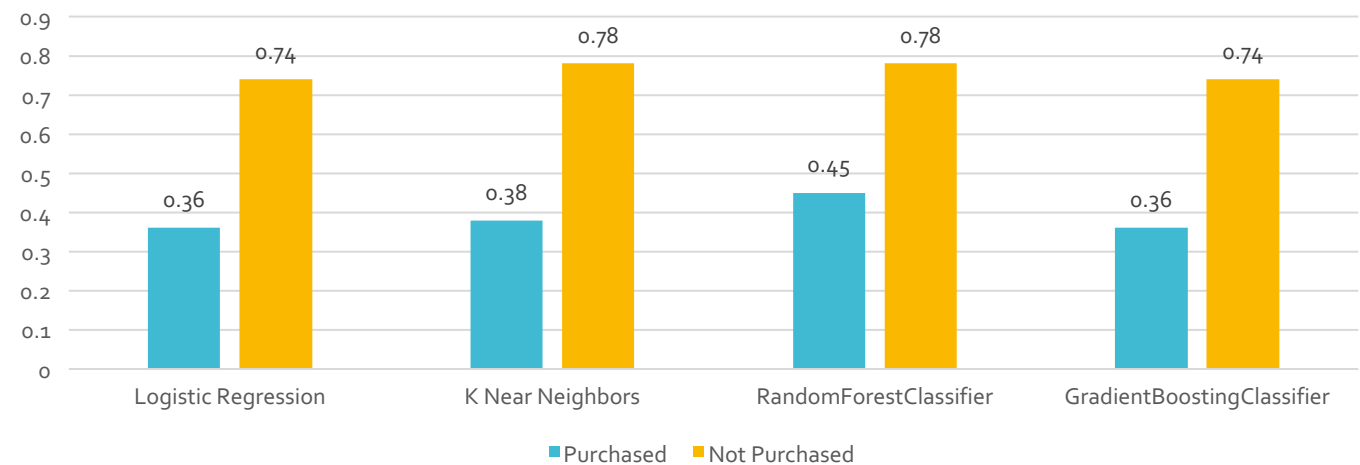
Labeled as Purchased: Labeled as Not Purchased

50,000 : 3,000,000

Imbalance Classes

F1 of prediction on "will not purchase" decreased.
F1 of prediction on "will purchased" increased.

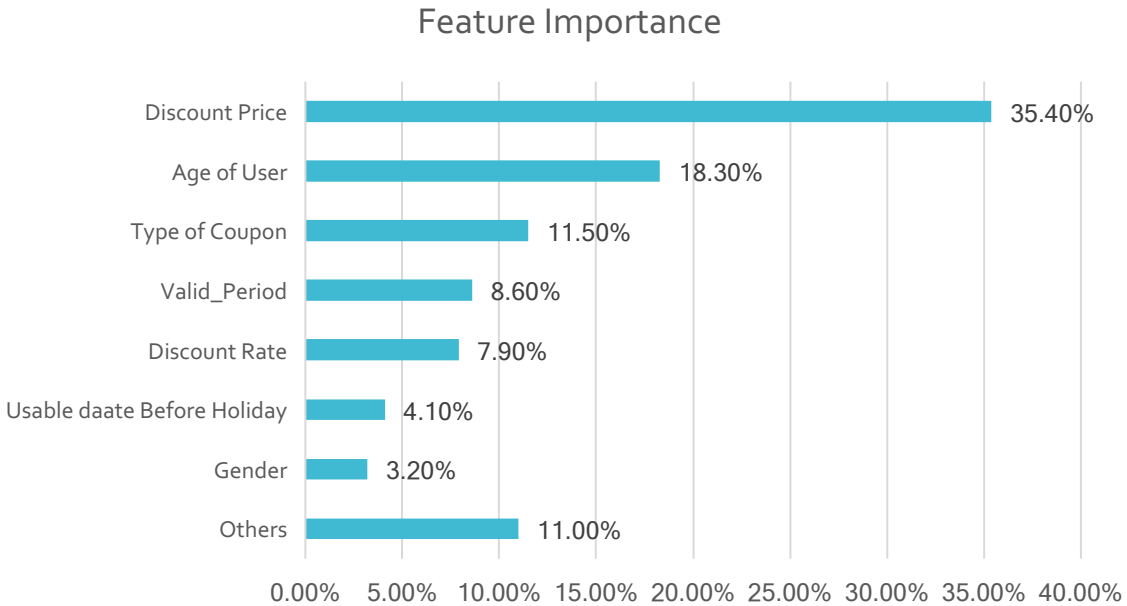
F1 Score- Under Sample



Threshold Value Selection

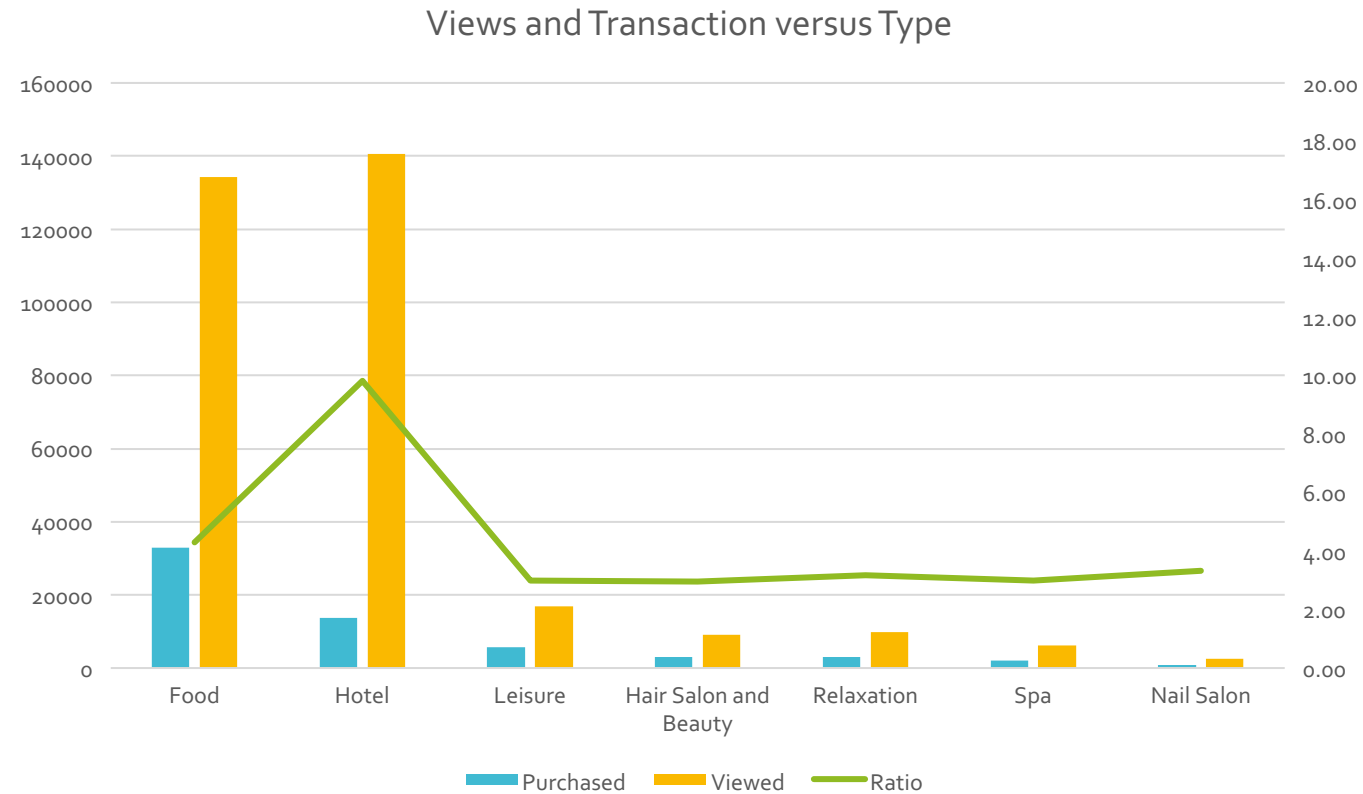
- Trade-off between Recall rate and Precision rate.
- Type I error: Good Coupons, predicted as not purchased.
 - Missed the coupons the customers want.
- Type II error: Bad Coupons, predicted as purchased.
 - Recommend wrong coupons to customers.

- ```
{0: 0.27777777777777778,
1: 0.27777777777777778,
2: 0.27777777777777778,
3: 0.11111111111111111,
4: 0.27777777777777778,
5: 0.27777777777777778,
6: 0.33333333333333333,
7: 0.27777777777777778,
8: 0.16666666666666666}
```



# Discussion and Future Work

- Random Forest Classifier.
- Discounted Price, Age of User, Type of Coupon are key features.
- Adding more relevant features especially on customer profile.



Thanks!