Guvi:Task-5_Assignment-3

Submitted by **Janaki S**

Adapted User feature importance

The “adapted user” column was generated from takehome_user_engagement.csv.

It was found to be an imbalanced data. Out of 12000 users, only 1602 users were adapted_users.

```
Class 0: 10398
Class 1: 1602
Proportion of class 0 is  86.65 %

<AxesSubplot:title={'center':'Count (adapted_user)'}>
```

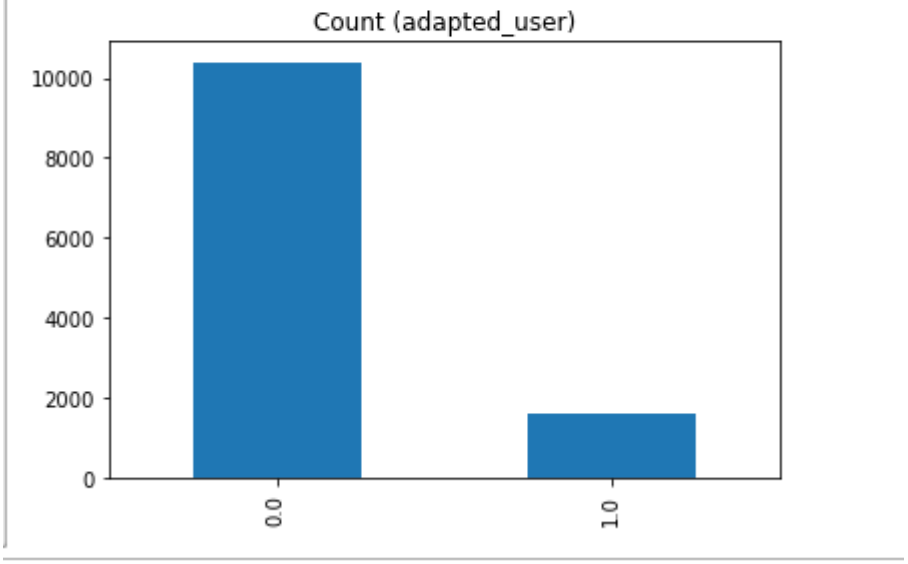


Fig 1: Bar plot of adapted_user

Fig2: Pair plot of all features and target

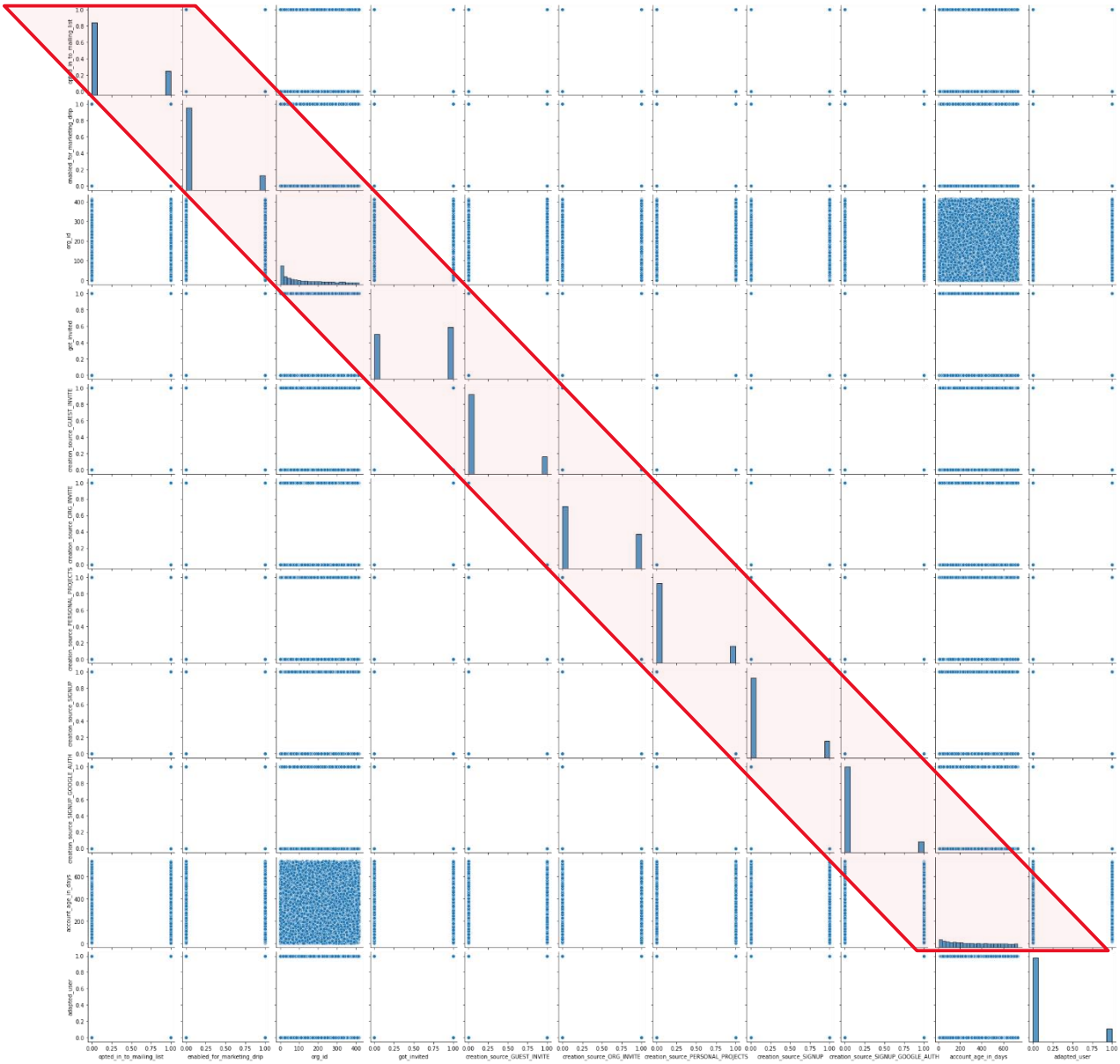
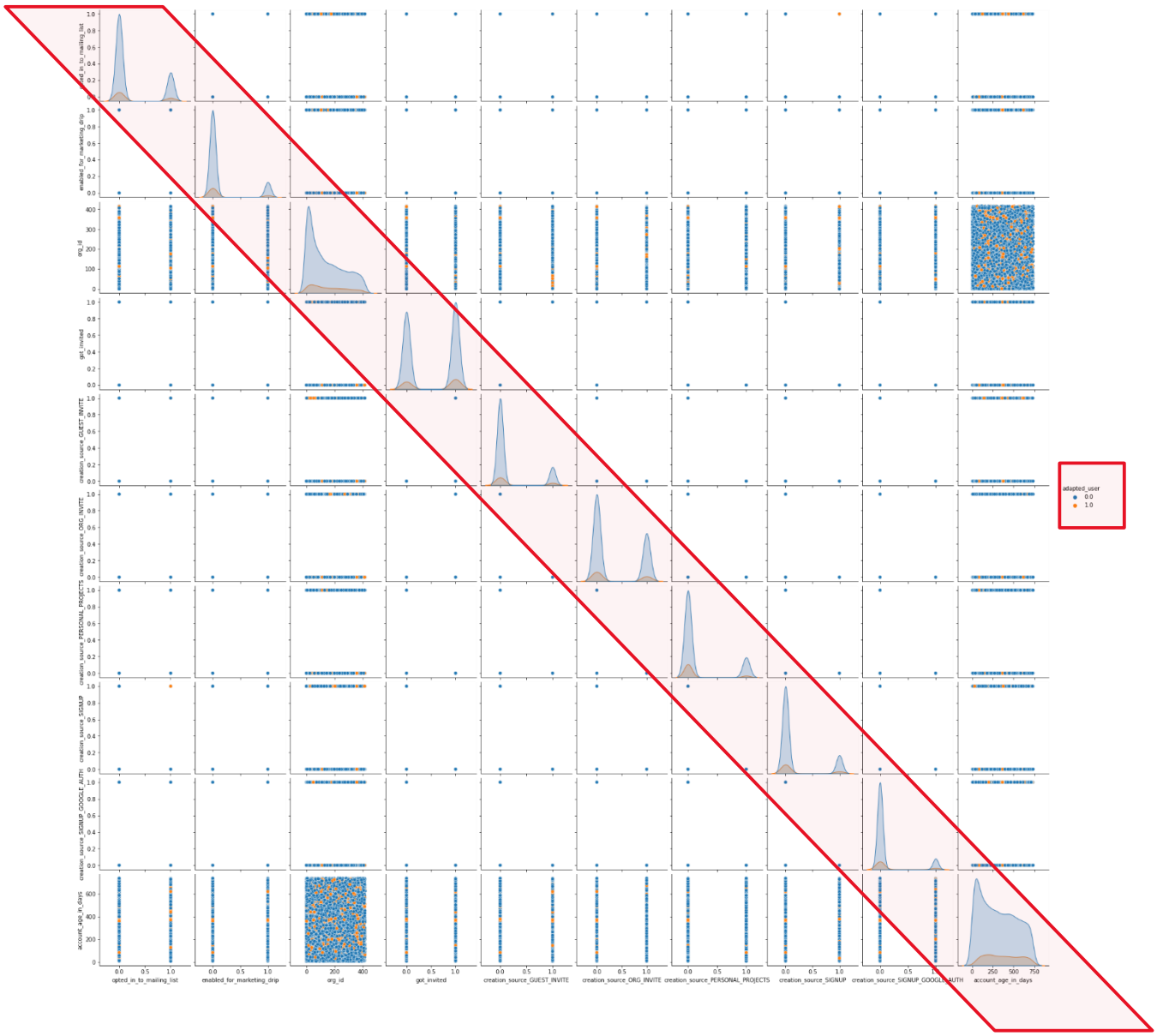


Fig3: Pair plot of all features with target as hue



from the above pair-plot (in hue) it is visible that users who have "opted_in_to_mailing_list" have adapted highly than compared to those who have not opted.

Also, a similar pattern can be observed in "opted_to_marketing drip" and all kinds of "creation_source".

But "got_invited" column has no notable effect on user adaption, as the number of adapted users is nearly equal in both cases, ie., who have got invited and who have not got invited.

"account_age_in_days" has notable effect in user adaption as well, as older accounts have slightly higher adaption rate

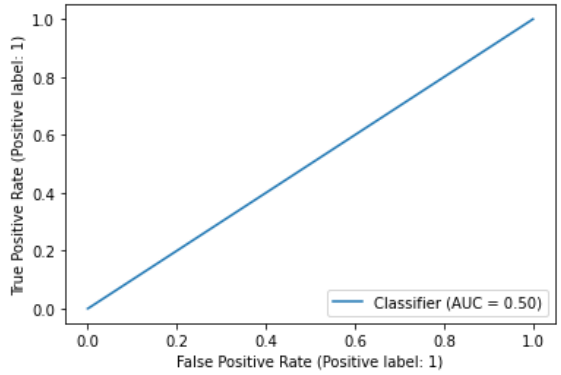
and newer accounts have comparatively lower adaption rate. A similar pattern can be observed in "org_id" as well.

The Decision Tree Classifier model gave decent classification with AUROC score being 0.50

```
Test set accuracy: 0.87
Test set auc y_test/y_pred: 0.50
```

```
: RocCurveDisplay.from_predictions(y_test, y_pred)

plt.show()
```



After fitting with the ML of Decision Tree Algo, the following features are found to impact the adaptation of users.

	Feature	Importance
0	opted_in_to_mailing_list	0.037761
1	enabled_for_marketing_drip	0.022986
2	org_id	0.386965
3	got_invited	0.010624
4	creation_source_GUEST_INVITE	0.012361
5	creation_source_ORG_INVITE	0.016693
6	creation_source_PERSONAL_PROJECTS	0.007069
7	creation_source_SIGNUP	0.015458
8	creation_source_SIGNUP_GOOGLE_AUTH	0.014440
9	account_age_in_days	0.475643

Table 1: Feature Importance

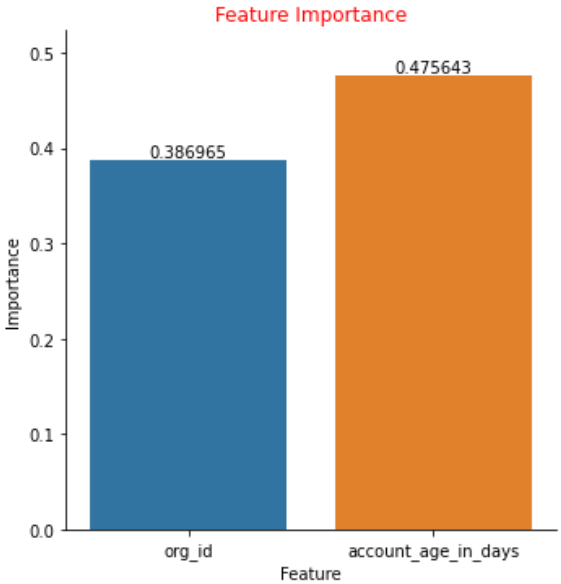


Fig 4: Feature Importance

These features are the important features in user adaptation.

Guvi_Task_5/asnmnt_adapted_user.ipynb