Relax Inc Take Home Challenge Findings

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In this project, we used two datasets to identify which factors predict future user adoption. In order to answer that question, we first cleaned our data and created a new feature *activity_time* in the user dataset that calculates the total duration in days between the time an account was created and the last login.We later created another feature named *adopted_user* on the user engagement dataset. The feature represents users who fit the definition of *adopted user.* There were 1602 such adopted users out of 8823 engaged users. We added that feature on the user datasets. We took the liberty to delete features that were not relevant to our analysis (like email, name, etc) before our user dataset was preprocessed. The preprocessing included one-hot-encoding one categorical feature *creation_source,* defining the target variable as the *adopted_user,* split features and target into training and test sets. A random forest model was deployed. It can predict user adoption with more than 96% accuracy.

```
activity_time                0.902810
org_id                       0.079568
opted_in_to_mailing_list     0.003574
enabled_for_marketing_drip   0.003272
ORG_INVITE                   0.003077
SIGNUP                       0.003066
SIGNUP_GOOGLE_AUTH           0.002728
PERSONAL_PROJECTS            0.001904
dtype: float64
```

Looking at the feature importance in our model, it was clear that the *activity_time*, the duration in days that a user stayed engaged (difference between the last time a user logged in and the time the account was created) was the most important feature. It was followed in the distant second position by the *org_id* feature, the organization (group of users) they belong to. Based on these findings, I would recommend that in order to increase the number of adopted users, Relax Inc. should offer incentives for existing users who use their products so that they don't stop using it prematurely. They should also incentivize users who invite other users to use their products.