# Relax Take Home Challenge

The goal of this project was to determine which factors are predictors of future user adoption based on the provided user data and user engagement data.

**Feature Engineering Target Labels**
The first main challenge was identifying current users as "Adopted" or not – which would then serve as the target labels for our classification model. An adopted user was defined as any user who had logged in at least 3x in any seven-day period.

Of the 8,823 users that logged in, it was determined that 1,656 of them met the definition of adopted users.

**Feature Engineering User History from User Data**
From the given data, it was interesting to engineer a feature that represented a user's history in days. This was done by taking the difference between the time the user created the account to the last session the user logged in. This way it could serve as an additional predictor for user adoption.

**Encoding Categorical Variables**
Finally, taking into account the source of the user's signup was also an important feature to factor in, since more users may sign up depending on where they got prompted. Since this feature was a categorical variable, it was one-hot encoded for use in prediction in the model.

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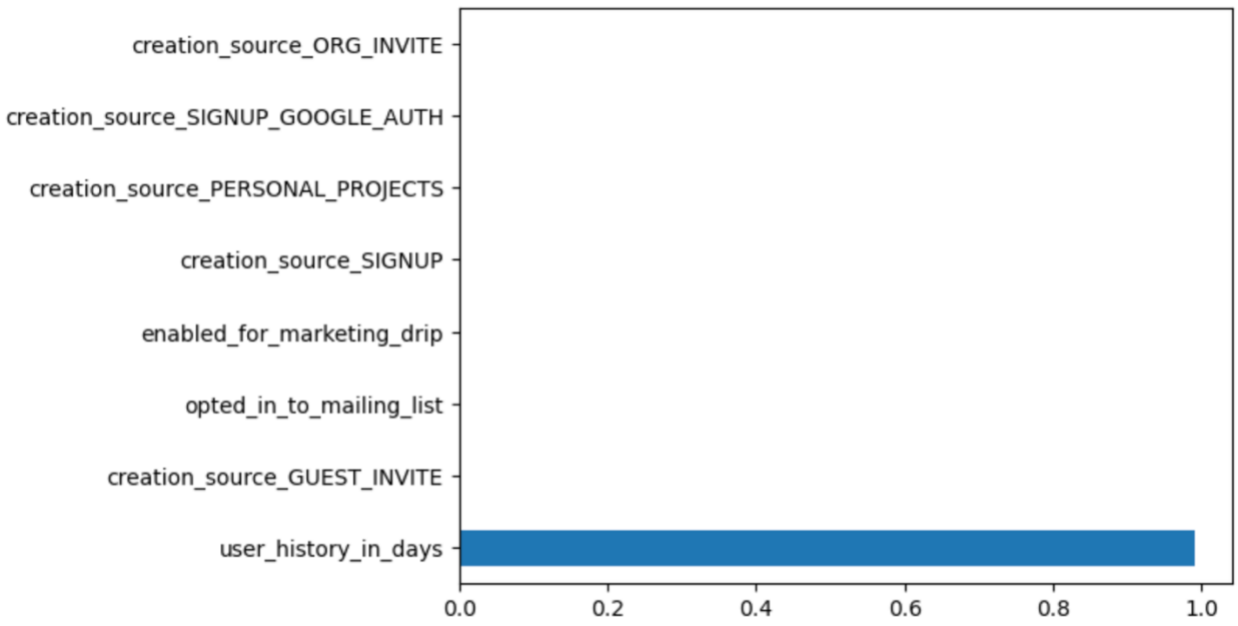
**Summary**
A Random Forest model performed very well across several key metrics including Accuracy, Precision, Recall and F1 score for the positive class with scores of 0.96, 0.94, 0.86 and 0.90 respectively.

| | precision | recall | f1-score | support |
|---|---|---|---|---|
| 0 | 0.97 | 0.99 | 0.98 | 1434 |
| 1 | 0.94 | 0.86 | 0.90 | 331 |

The model showed the number one predictor for future user adoption as being the length of the user history in days. The remaining features had little to no impact on the model. Perhaps, more useful data about the users may be more impactful on the model. Furthermore, testing on other kinds of models might prove beneficial.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