**Compatibility Calculator**

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**Overview**

Our goal is to create a prediction tool that can combat dating app overuse and elevate matchmaking experiences with a more precise algorithm. Perfect Signs, is an online prediction tool that recommends ideal preferences in a partner for relationship compatibility and happiness.

**Problem**

By 2040, about 70% of couples will have met online. Studies show millennials spend on average [20 hours/week on dating apps](https://www.psychologytoday.com/us/blog/close-encounters/201908/can-using-online-dating-apps-be-addictive). The dating industry is estimated to be worth [$3 billion](https://www.marketwatch.com/story/this-is-why-loneliness-and-dating-apps-are-such-a-bad-match-2019-08-01) but currently only at a 44% success rate.

Matchmaking platforms, such as dating apps and matrimonial sites, encounter the following pain point—user loyalty and difficulty in creating an algorithm strong enough to filter accurate profiles. Additionally, we found that existing dating apps such as Tinder or Bumble fail to consider and showcase an individual’s personality and preferences in their partner, aside from a smattering of photos or a short user-provided biography.

The end-users, mainly young adults, are tired of spending an excessive amount of time on dating apps. Many younger audiences also turn to astrology for guidance through apps like Costar that provide daily horoscopes and calculate the general compatibility between themselves and other users, but the advice given by these platforms is often vague and with little explanation for their basis. Some cultures take horoscopes seriously, which is missing in mainstream dating apps.

Our problem statement that we wish to articulate through this project is: can we predict a user’s preferences in a partner for overall relationship compatibility and happiness?

**Solution**

We collected responses via a Google survey from individuals on their current or former partners on their background, happiness, compatibility, preferences, zodiac, and personality traits in the relationship. Upon collecting data, we performed EDA and Feature Engineering to understand and select features that correlate to successful and unsuccessful relationships. Our EDA included several heat maps and charts to understand relationships and trends between features among respondents and their partners. The selected features modeled what was provided by the survey.

Our algorithm utilized two basic tools: a logistic regression model and a decision tree classifier. Utilizing only data pertaining to the respondents, we created a matrix of features that would train our logistic regression model and decision tree classifier. We created a series of logistic regression models to predict the characteristics that were most common in the relationships of people with qualities most similar to the user. We also created a decision tree classifier to predict the most compatible horoscope. Our models had testing accuracy scores that varied between 0.8 and 0.95 depending upon the model. Based on the results of the model, we were able to build the “ideal match” partner profile.

On the front end, we used Plotly’s Dash to create our UI and deployed it through Heroku. This convenient website makes it easy to test and explore our product; in the future, this ideally is not a standalone piece, but rather an integration into dating apps or other platforms.

**Presentation**

Please find the link to our Google slides here: [Presentation Slides](https://docs.google.com/presentation/d/1Dp67Zk2T259ZzIVnhH6SlC6WXJrXqEG27ut6n2gLGxE/edit#slide=id.p2)