Classification model to better target advertisements

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Background and Problem Statement

Johnson Family Law

- Pre-nuptial agreements
- Divorce cases

Problem

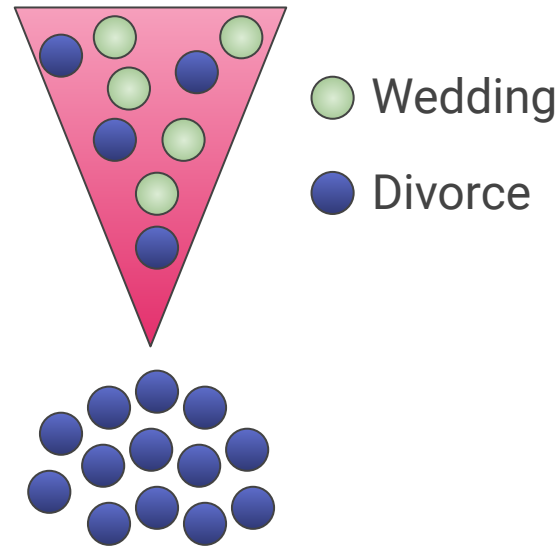Social media advertisements for divorce services reaching engaged couples

Background and Problem Statement

Problem

Social media advertisements for divorce services reaching engaged couples

Possible solution

Build classification model to separate wedding planning posts from divorce posts

Wedding

Divorce

Tricky post

Subreddit: **Wedding Planning**

Title: Father/daughter dance alternative options?

Post (shortened): […] I am mostly having difficulty right now deciding who to do a father/daughter dance with. My parents divorced early on, around age 7. My dad has been in and out of my life since due to legal issues and jail time. I still love my dad and realize that he had a lot going against him, especially financially since my grandparents on my mother's side paid a lot to keep my siblings and me under full custody under my mother. My grandfather never got to walk my mother down the aisle since they eloped so my grandfather on my mom's side will walk me down the aisle which I am fine with.[...] Also if it wasn't apparent my grandparents on my mom's side HATE my dad but everyone else on my mom's side likes him.

Methodology

1. Data Collection

    🎣🔒 Reddit API → 8,000 total posts from r/Divorce and r/WeddingPlanning

2. Data Cleaning

    🗑️   Remove duplicates

    ❌   Deal with removed, deleted, & null posts → stop words

3. Data Pipelines

    🔢   Convert words in posts & post titles to numbers

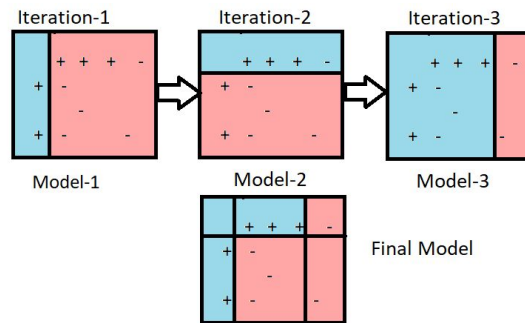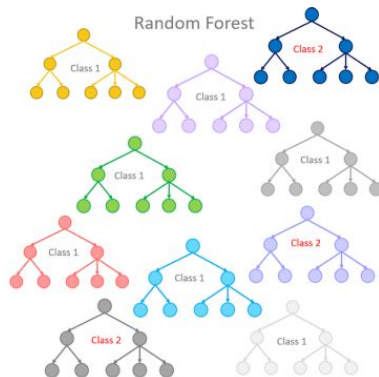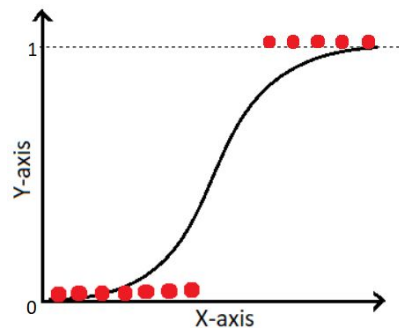   📈   Fit, evaluate, and tune different models

    …repeat!

Model Selection

"Help, I need to tailor my wedding dress!"

1-3 word phrase

Exclude common and rare words

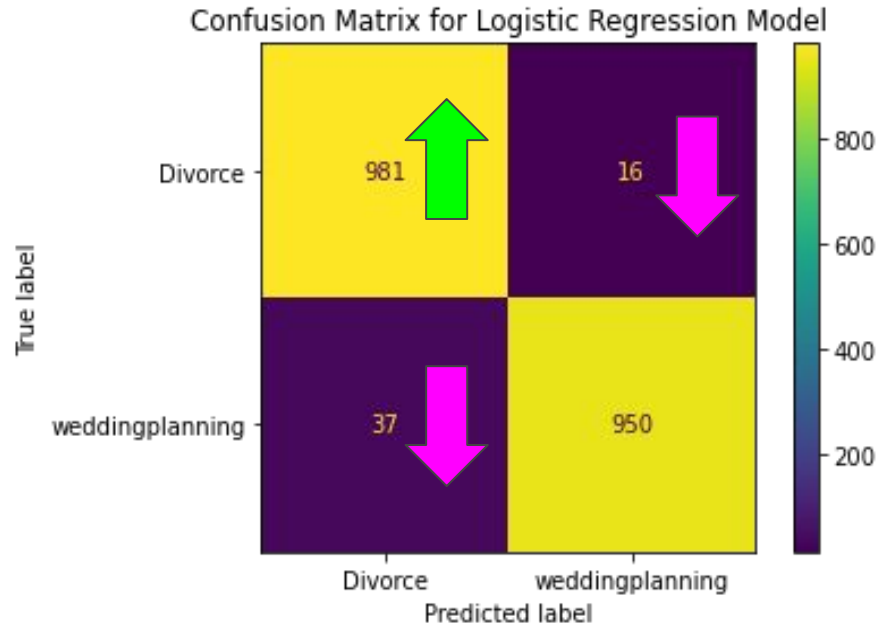[0, 0, 1, 0... 1, 0, 1]

Logistic Regression

+

Random Forest Classifier

+

AdaBoost Classifier

Model Comparison

Confusion Matrix for Logistic Regression Model

Metrics

Accuracy

Recall

Model Evaluation

	Accuracy ↑	Recall ↓
Baseline	50.3%	100.0%
Model	97.4%	99.0%

Much better accuracy at expense of missing 1% of divorce posts

Model Evaluation

Actual Subreddit: Divorce
Title: Has anyone used Worthy to sell their rings?
Post: I have my band and engagement ring to sell, they're appraised at around 10k together. I know I'm only going to get a fraction of that I'm just of course looking for the easiest way to get the most I can. Worthy seems pretty safe and hassle free just wondering if anyone has used them 💍

Odds of wedding planning:
113-120%

Odds of wedding planning:
45%

Conclusion and Recommendations

Ready for deployment 🚀

    👓 Reach 99% of divorce posts

    💁 Eliminate 95.7% of wedding planning posts

    💬 Better craft divorce advertisements

Share model with other advertisement partners
for use in other forms of social media

Questions?

Image sources

Slide 2, lawyer image, https://www.pexels.com/photo/lawyers-posing-for-a-photo-4427430/

Slide 6, classification model images:

https://medium.com/analytics-vidhya/the-math-behind-logistic-regression-c2f04ca27bca

https://towardsdatascience.com/from-a-single-decision-tree-to-a-random-forest-b9523be65147

https://medium.com/swlh/developing-the-right-intuition-for-adaboost-from-scratch-771749f36ce9

Slide 10, advertisement image:
https://www.oddee.com/item_99581.aspx