

Smile

Mental Health Monitor

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Agenda

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Problem & Motivation

- Problem:
 - Globally, an estimated **264 million** people suffer from depression
 - Depression and anxiety have a significant economic impact; the estimated cost to the global economy is US\$ **1 trillion** per year in lost productivity.
- Motivation:
 - Want to build an app that uses ML to predict probability of an employee having mental issue to provide high risk individuals appropriate treatment and prevent them from suffering more severe symptoms

Demo: <http://18.222.232.63:3000/>



Dataset

Mental Health in Tech Survey dataset (Kaggle)

- This dataset is from a 2014 survey that measures attitudes towards mental health and frequency of mental health disorders in the tech workplace
- The dataset has 1259 survey data points and 27 features (25 questions)
- 50.6% of the participants report to have mental issues
- Dropped NA values and created features such as top 10 surveyed countries, final data dimension is (1158,43)
- Converted categorical variables to numerical and one-hot encoded features such as country or states



Approach

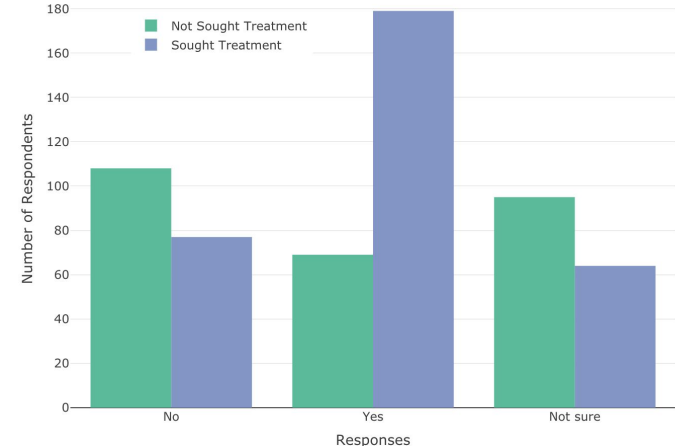
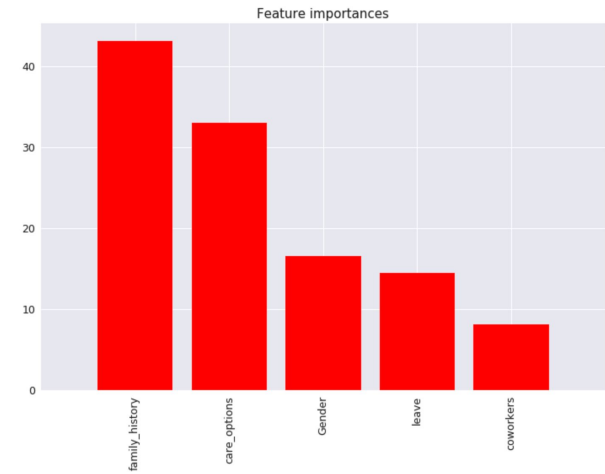
- Dropped variables that have high correlation with the response
- Build model with Logistic Regression, KNN, Decision Tree, Random Forest and Xgboost for binary classification
- Performed hyperparameter search using random search for 20 times with 20 searches in each time and evaluated each search result on a 10-fold CV.
- Random forest turned out to be the best model with CV:
 - AUC: 0.763
 - Accuracy: 0.697
 - F1 score: 0.721





Insight

- Family History seems to be the most critical factor that affect whether one would have mental problem
- Whether the company has care option for mental issue and gender are also important
- One interesting thing is that employees that knows their company has care option is more likely to have sought for treatment



THANK YOU!

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