%%%% Better Poster latex template example v1.0 (2019/04/04)

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%%%% Rafael Bailo

%%%% https://github.com/rafaelbailo/betterposter-latex-template

%%%%

%%%% Original design from Mike Morrison

%%%% https://twitter.com/mikemorrison

\documentclass[a0paper,fleqn]{betterposter}

%%%% Uncomment the following commands to customise the format

%% Setting the width of columns

% Left column from original 0.25

\setlength{\leftbarwidth}{0.27\paperwidth}

% Right column from original 0.25

\setlength{\rightbarwidth}{0.27\paperwidth}

%% Setting the column margins

% Horizontal margin

%\setlength{\columnmarginvertical}{0.05\paperheight}

% Vertical margin

%\setlength{\columnmarginhorizontal}{0.05\paperheight}

% Horizontal margin for the main column

%\setlength{\maincolumnmarginvertical}{0.15\paperheight}

% Vertical margin for the main column

%\setlength{\maincolumnmarginhorizontal}{0.15\paperheight}

%% Changing font sizes

% Text font

%\renewcommand{\fontsizestandard}{\fontsize{28}{35} \selectfont}

% Main column font

%\renewcommand{\fontsizemain}{\fontsize{28}{35} \selectfont}

% Title font

%\renewcommand{\fontsizetitle}{\fontsize{28}{35} \selectfont}

% Author font

%\renewcommand{\fontsizeauthor}{\fontsize{28}{35} \selectfont}

% Section font

%\renewcommand{\fontsizesection}{\fontsize{28}{35} \selectfont}

%% Changing font sizes for a specific text segment

% Place the text inside brackets:

% {\fontsize{28}{35} \selectfont Your text goes here}

%% Changing colors

% Background of side columns

%\renewcommand{\columnbackgroundcolor}{black}

% Font of side columns

%\renewcommand{\columnfontcolor}{gray}

% Background of main column

%\renewcommand{\maincolumnbackgroundcolor}{empirical}

%\renewcommand{\maincolumnbackgroundcolor}{theory}

%\renewcommand{\maincolumnbackgroundcolor}{methods}

%\renewcommand{\maincolumnbackgroundcolor}{intervention}

% Font of main column

%\renewcommand{\maincolumnfontcolor}{gray}

\DeclareFontFamily{U}{skulls}{}

\DeclareFontShape{U}{skulls}{m}{n}{ <-> skull }{}

\newcommand{\skull}{\text{\usefont{U}{skulls}{m}{n}\symbol{'101}}}

\begin{document}

\betterposter{

%%%%%%%% MAIN COLUMN

\maincolumn{

%%%% Main space

\textbf{Main finding} goes here, \\

translated into \textbf{plain English}.\\

\textbf{Emphasize} the important words.

}{

%%%% Bottom space

}

}{

%%%%%%%% LEFT COLUMN

\title{Predicting Bank \\Customer Churn}

\author{Joseph Gallegos, Ajay Kallepalli, Lyndon Liang, Charles Liu, Anshuman Mahalley}

\institution{UCLA Statistics}

\section{Introduction}

As a competitive business, a bank would like to retain their existing customers and grow their customer base. To reduce the loss of customers (or churning), we seek to investigate variables that potentially influence customer behaviors and determine how the bank can minimize losses and optimize performance.

\section{Exploratory Data Analysis}

When first exploring the data we realized that not much cleaning needed to be done.

So we started by modifying the character variables into factors to help with modeling. We also decided to modify the economic class variable to simplify the process of determining people's Social Economic Status. We decided that lower income status would be "Less than \$40K", middle income would be "\$40K - \$60K" & "\$60K - \$80K", and high income would be "\$80K - \$120K" & "\$120K +". We then plotted this variable to see if there is significant difference between the economic classes from the attrited customers and existing customers.

\section{Plot}

Plot for Economic class with attrited vs existing customers

}{

%%%%%% RIGHT COLUMN

\section{Model Proposal}

We considered various classification methods like logistic regression, K Nearest Neighbors and random forest to predict which customers would churn. Our final model was a random forest model with the following variables listed in decreasing order of their MeanDecreaseAccuracy: Total\_Trans\_Ct, Total\_Trans\_Amt, Total\_Revolving\_Bal, Total\_Relationship\_Count, Avg\_Utilization\_Ratio, Total\_Ct\_Chng\_Q4\_Q1 etc. Hyperparameter tuning was done using grid search and our best performing model had parameters mtry = 15, ntree = 500 with an accuracy of 96.45%.

\section{Conclusion}

We can clearly see from the model that there are certain variables that correspond to a customer being more likely to cancel their subscription. In order to maximize profit it would be best for a company to use this model to identify those customers that are most likely to churn and proactively try and improve their experience through better support or various other direct incentives. The company can also use this information to target new customer acquisition in demographics that it sees as least likely to churn. Ultimately there are numerous valuable and actionable insights that a company can glean from our presentation.

\section{References}

Data:

https://www.kaggle.com/sakshigoyal7/credit-card-customers\\

Website:

https://jfin-swufe.springeropen.com/articles/10.1186/s40854-016-0029-6

\vfill

\includegraphics[width=\textwidth]{img/DeptLogo.png}\\

}

\end{document}