Homework - Week 10

PART 1:

Based on just one dataset: the one they've collected internally on customer browsing patterns on the web site

Given:

- title
- first name
- middle initial
- last name
- credit card type
- credit card number
- list of products purchased in the past, with date of purchase and ship-to address
- which web pages the person looked at
- how long the person spent on each page
- what the person clicked on each page
- estimate of how long the user's eyes spent on each page viewed (for customers where the software was able to take over the device's camera)

To:

Cluster the different categories of products purchased; and to determine which products are purchased together

Using:

k-means clustering and Louvian Algorithm. This would shed some light about the products most bought by the customers. This would help the company make informed decisions about which products they need to focus their marketing efforts on. The variables that will help with this clustering analysis are the list of products purchased in the past, what the person clicked on each page, and how much time the user spent on each page. The idea is very similar to the Amazon's deep learning that gives "suggestions based on viewing history". Louvian algorithm will help determine which products are purchased together.

To:

Identify if time spent on a product page has increased or decreased over time

Using:

CUSUM approach will help us tell if marketing for a particular product would make sense. If the number of views has decreased rapidly which suggests a decreasing trend, then it might be better to turn focus on marketing the product that might sell more in the future. If the decrease in views is not a steady trend, then the next model would help predict if the customer will purchase the product, and the steps the company needs to take to make the sale.

To:

Predict whether the customer will purchase a product in the near future, that will help to steer the customer to make the purchase.

Using:

I'd use a technique like **Logistic Regression or Random Forest** technique to predict if the customer will purchase the product. A threshold of greater than 90 or 95% will help the company push marketing to steer the customer make the purchase.

PART 2:

Combining more than one of the data sets.

Given:

I am going to combine all the 3 datasets. Datasets purchased from an alumni magazine publisher, purchased from a credit bureau, collected by the company using web site tracking code.

To:

Identify the products purchased together.

Using:

k-means clustering and louvian algorithm to cluster products purchased together. This will help the company identify the type of products different people will buy. This can help with creating a deep learning model where each customer will have his/her own product recommendations based on browsing history

To:

Help create a payment plan for the customers to purchase a product based on their past purchasing history. Credit card companies can use this information to host their ads on the company's website to help creditworthy customers purchase their credit cards. This will increase sales for the company, and can also earn a hosting fee plus sales commission from the credit card company

Using:

Logistic Regression will help the credit card company make a decision to offer a pre-approved card based on the probability of the customer repaying loans. Using data such as financial net worth (data set 1), list of monthly payment status over the last five years for credit cards, mortgages, rent, utility bills, etc. – for each month and each payment (from data set 2), the company along with a financial services company can help sell the product and a credit card to the customer.

To:

Predict whether the customer will purchase a product in the near future, that will help to steer the customer to make the purchase.

Using:

I’d use a technique like **Logistic Regression or Random Forest** technique to predict if the customer will purchase the product. A threshold of greater than 90 or 95% will help the company push marketing to steer the customer make the purchase.