**[Use Case](https://blackboard-v9-p.iit.edu/webapps/assignment/uploadAssignment?content_id=_465342_1&course_id=_53921_1&assign_group_id=&mode=view)**

**New Service:** Customized Delivery system which can offer different delivery days according to customer’s location. The old system only offers two options, two days or seven days. In fact, some locations need more days or less days. This new system will offer more specific options to customers.

**Target:** Barnes & Noble'sonline bookstore (Because of huge amount of customers, sometimes, this online bookstore is lack of employees to process some locations’ orders. Then, they could not delivery the orders on the due date and lose customers in the future.)

**Metrics:** Number of Customers (Customer Traffic), Customers’ locations, Supplier Base Cost, Inventory Amt, Gross Sales Amt, Sale Price, Customer Feedback, Order Locations Distribution.

**Models:**

**Setp1:** Analyzing the data of customer feedback from 2006 to 2016, build up a Sentiment Scoring function to search the customers who complain on the delivery system. Then, determine the potential losing customers and their locations.

**Setp2:** Analyzing the data of customers from 2006 to 2016, build up a customers’ locations map to determine which locations are overlap with the potential losing customers’ map. Then, segment the customers according to the map. Then, use cluster to create a new delivery day system.

**Step3:** Analyzing the data of potential losing customers’ order history, use regression to predict their next order amount which could be the possible loss in the next year.

**Step4:** Analyzing the data of Gross profit (Gross profit = Revenue per item – Cost of items and selling process) from 2006 to 2016, use regression to predict the next year Gross profit. Final, add the possible loss which did in the Setp3 and get a new possible Gross profit in the next year.