**e-Commerce Chatbot using Natural Language Processing**

**(*NLP/ML Example*)**

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**Customer Summary:**

A Japanese e-Commerce Software company that provides a service to sellers of merchandise on their website

**Challenge:**

The software company’s service collected large amounts of valuable user data which their customers (the sellers) were having trouble accessing. The only way to see this data is to manually search, tag, and run reports which was a time intensive and cumbersome process. They wanted to have a system in which a user could query the database in a natural way using text entries to filter and slice the data sets in ways which was relevant to their specific business goals.

**Solution:**

In order to accomplish the goals of this project, we set up a software environment that interfaced with the client’s existing databases and rules. Our solution was to train a deep learning algorithm using a neural network to ingest the typed queries, written in common English, and parse the verbiage in a way that the database could be relevantly searched and queried in order to present the user with accurate, relevant results. Examples of these kinds of queries are as follows:

"Tell me the amount of sales that happened the week before Christmas last year?"

“How many of those products were returned within 30 days of purchase?” “Which specific SKUs”

"How many shoes were sold July after the 4th?"

"Who were all the male customers in the US between the ages of 18-35 that bought a bicycle last year?"

As the algorithm parses texts and classifies queries, the model is updated and trained. The efficiency of classification vastly improves after each iteration of training and the model is better able to predict the meaning of the query.

We used the software development methodology of:

1) Development
2) Testing
3) Staging
4) Production

These environments are maintained to support the Development, Testing, Customer Acceptance, and Deployment phases of the Software Development Life Cycle (SDLC), which is patterned after CMMI-3 SDLC requirements.

**Accomplishments and Results:**

- This is an ongoing project but we hope to expand these predictive analytics to an inventory tool which will allow sellers to accurately stock their product based on historical patterns deduced from analyzing the data.

**Technologies Used:**

- Machine Learning (Python, Tensor Flow), open source libraries for parsing text,

- SQL Server backend

**Cost/Schedule:**

TBD – estimated $50k