EAS 504 ASSIGNMENT-5

By: - Katyayni Shankar Kaushik (50289158)

General Information: -

The following Lecture was held by Mr. Manojkumar Rangasamy Kannadasan, he, currently, works as a Tech Lead Data Scientist in eBay. He talks about various applications of Data Science in the ecommerce domain and discuss various case studies.

Base Questions: -

1.) What are principal uses of data sciences in this domain?

Ans) Data Science has many applications in e-commerce domain (eBay). Few of them are as follows:

- Search
- SEO
- Trust/ Fraud/Abuse
- Selling
- Shipping
- Pricing
- Merchandising

- Ads/Marketing
- Structured Data
- Inventory Management
- Machine Translation
- Coupons & Rewards
- Customer Service
- Infrastructure

2.) How are data and computing related methods used in the organizational workflow?

Ans) Data and computing related methods are used in following ways in organizational workflow of eBay: -

- Intent classification is used for query understanding.
- Probabilistic ranking is used for faceted search, spell correction, structured/ related/ comparative/ seller recommendations.
- Query categorization is used for huge number of listings on eBay website using Deep semantic similarity model (DSSM) & Convolutional latent semantic model (CLSN).
- Personalized query autocompletion is used for saving time of the user, avoiding spell errors, promoting top products and reaching to the product faster.
- Methods such as Directed Acyclic graphs (DAG), Naïve, Trie, DAWG, suffix trees (compressed/ non-compressed) for efficiency in spell correction are used.

3.) What data science related skills and technologies are commonly used in this sector?

Ans) The data science related skills and technologies commonly used in this sector are as follows: -

- Recommender Systems used in different type of searches.
- Python, R programming, Machine Learning (Convolutional neural networks for image data), NLP techniques for text data (Word2Vec), n-grams.

- Deep Semantic Similarity model (DSSM) & Convolutional latent similarity model (CLSM), both of them can categorized as deep learning techniques.
- Fasttext, FastCat library by Facebook is used. Fastcat is a shallow deep learning method, which 20 times faster training time than DSSM, CLSM and runs on commodity hardware thus making it comparatively cheap.

4.) What are the primary opportunities for growth?

Ans) Data is growing at a very rapid rate, as a result of which companies are trying to implement data science techniques to use the available data in the best possible way. E-commerce domain holds huge potential for e.g. eBay has 180 million buyers, $22.6 billion Gross merchandised value, $ 2.6 billion of revenue, with 60% of all its customers being internationals. This brings in opportunities in the field of ads/ marketing, inventory management, recommendations made to buyers & sellers etc. All this would help improve buyer and seller experience, maximizing the revenue, thus making the business more profitable and convenient to do.

Other Questions with respect to this Lecture: -

Ques.) Please discuss how sellers and buyers may need different data science driven features in an e-commerce platform such as e-Bay.

Ans) Buyer and Seller have very different needs and thus have different features as per there requirements: -

Buyers

Buyer experience is be aimed at making transactions more comfortable for individual who visit website to make purchases. Thus, buyers are provided with features such as intent classification, query categorization, query auto-completion, recommendations based on relative/ comparative/ structured searches, spell correction recommendation for buyers to search for the correct product or the one they are looking for.

Seller

Seller experience is aimed at making it easier for an individual to sell there products online. Thus, they require different set of features when compared to buyer. For e.g. comparative auto-pricing feature helps the seller to make an informed decision while setting the price of a product. Top products recommendations help sellers, trying to sell quality products, make their listings more visible on website. Spell correction feature can also be used to improve seller experience. Sometimes seller list their products with incorrect spelling, this feature ensure that products are listed correctly.