EAS 504 ASSIGNMENT-4

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General Information: -

The following Lecture was held by Mr. Jonnathan Manes, he is the assistant professor in UB School of Law. He talks about Data ethics and Laws, usage of data for policy judgement, discrimination, fairness & transparency, personal privacy in context of data usage.

Base Questions: -

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

Ans)   There were many use cases that were discussed by the speaker in the video: -
- Street Bumps application designed to predict potholes
- In healthcare, to replace the nurses with automated machines
- In medicine, to recommend drugs to patients
- To make crime prediction, used by police department.

And so many more ….

The principal use of Data Science and Ethic/ laws, in Data Science domain is to ensure that the data is not used for discrimination, is fair and transparent and maintains individual's privacy.

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

Ans)   Data and computing methods can be used in multiple ways in organizational workflow of Data Science industry. The main motive is to ensure that these techniques are used in right way and in no way breaches trust of the consumer. According to the speaker, few of the methods are as follows: -

- Amazon used Machine Learning algorithms to screen resumes for candidate selection.
- Los Angeles Police Department used COMPAS (Criminal Risk Scoring Tool) to identify the suspects, which in turn uses predictive modeling techniques.
- IBM Watson uses big data techniques and artificial intelligence to recommend drugs to patients.

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: -
- Machine Learning techniques
- Recommender Systems
- Big Data technologies to handle vast amount of data
- Artificial Intelligence

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 explore techniques to use the available data in the best possible way. This brings in a requirement to curb the misuse of data. Companies like Cambridge Analytica, CompuCredit, Facebook have tried to use the people's information in every possible way, either through understanding people's opinion, or through monitoring the purchasing habit or through target marketing. Data brings in enormous opportunities in different industries. Government has created organization such as: -Federal Trade Commission, Fair Credit Reporting Act, EU General Dara Privacy Regulation, to ensure fair use of data. Data has lot of potential, whether it be Healthcare industry or Banking Industry or E-Commerce and can be very effectively used for trend analysis to make the market function in much more optimized fashion.

Other Questions with respect to this Lecture: -

Ques.) Please take an example data science problem in a domain that would come under one of the US laws described by the speaker and describe some safeguards that are necessary to be in compliance with US privacy laws. Discuss what additional safeguards might be necessary to comply with the EU GDPR requirements?

Ans.)   One example that would under data Science domain and that should comply with the US laws as described by the speaker is as follows: -

Facebook developed a recommender system, wherein company use to identify the target consumer population, which were their own employee, so as to recommend them houses through advertisements. To do this, Facebook identified people based on their age, sex, color etc. This was a housing discrimination and company was sued for such an act.

US has taken strict measures to ensure that Data privacy, transparency and fairness is maintained.

1.) Federal Trade Commission (FTC): -
   It is a consumer protection watchdog to ensure that there is no misuse of public's private data.

2.) Fair Credit Reporting Act (FCRA): -
   This law gives an individual the right to know what information has been used against him/her.

3.) Fair Credit Recording (FCR law): -
   This law states the guidelines, how and which data can be used to determine an individual's credit.

   Other laws are as follows: - HIPAA, FERPA, FACTA, RFPA, GLBA, COPPA, VPPA, Privacy Act

Safeguards necessary to comply with EU General Data Privacy Regulation (GDPR) are as follows: -

- All uses of data are forbidden unless permitted.
- Right to access information.
- Right to know, with whom data was shared with.
- Requirement to "make consent withdrawal easy".
- Right to Data portability.
- Right to Data Erasure.
- Transparency, algorithm uses meaningful information.
- Right to a "Human in the loop", for decision with serious effects.
- Right to Challenge the decision to a human decision maker.
- Right to an explanation of the reasons for the decision.
- Algorithmic Auditing