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Data Security

SGA07_DATASCI

21st April 2020

Book Keeping

- Group Tasks (25% of total course score)
  - Due date 24th April
- The last learning modules (Guest lecture | 5th May)
  - ~~Gist: IoT Engineering~~ Data Engineering
- 4 weeks for Final Project (50% of total course score)
  - Due date 29th May

Module Overview

- Definition of Data Security
- Common concepts to secure data
- Key challenges: Explosion, Regulation, Complexity & Behaviours
- Your Role as a Data Scientist in overall Cyber Security
- Use-case of AI in Cyber Security

Data Security (Def.)

- Protect Assets
  - Personal & Business Data
  - IT Infrastructure
- Meet compliance & standards
- Will require combination of people, processes and technologies
  - Unified approach
  - Integrated systems
  - Scalable across environment

> Data security is a set of standards and technologies that protect data from intentional or accidental destruction, modification or disclosure.

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Common Concepts

Data encryption applies a code to every individual piece of data and will not grant access to encrypted data without an authorised key being given

Masking specific areas of data can protect it from disclosure to external malicious sources, and also internal personnel who could potentially use the data.

There are times when data that is no longer active or used needs to be erased from all systems.

By creating backup copies of data, organisations can recover data should it be erased or corrupted accidentally or stolen during a data breach.

Challenge 1: Explosive Data Growth

- Datafication
- Growth at exponential rate
- New data sources & types

Challenge 2: New Privacy Regulations

- General Data Protection Regulation (GDPR) 2016
- Nigeria Data Protection Regulation (NDPR) 2019

Challenge 3: Operational Complexity

- Movement to cloud
- Big data technologies
- Disparate tools from multiple vendors

Challenge 4: Skill Shortage

- Lack of security professional
- Gap expected to widen in coming years

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Capabilities (Word Cloud)

Data Discovery

Encryption

Key Management

Data Classification

Blocking, Masking and Quarantining

Vulnerability Assessment

Data and file activity monitoring

Real-time Alerting

Active Analytics

Data Risk Analysis

Tokenization

Automated Compliance

Data Science & Cyber Security

- Protection from the outside in
  - protect the data being fed into the model
  - protect the model
- Protection from the inside out
  - monitor a model's performance once deployed into production
  - establish results thresholds

> The role of data security scientist mirrors that of a data scientist with one key difference: a laser focus on assessing whether an organisation is protecting its most valuable data efficiently and according to regulations or industry standards. Like a data scientist, a data security scientist also looks at the complete life cycle of organisational data

Use-cases of AI in Cyber Security

- Network threat analysis
- Malware detection
- Security analyst augmentation
  - Automate repetitive tasks
- Threat mitigation

Recap/Summary

At the end of this Module, you should understand;

- Definition of Data Security
- Common concepts to secure data
- Key challenges: Explosion, Regulation, Complexity & Behaviours
- Your Role as a Data Scientist in overall Cyber Security
- Use-case of AI in Cyber Security

Suggested Material

- https://www.forcepoint.com/cyber-edu/data-security
- https://www.ibm.com/security/data-security
- https://www.dataversity.net/role-data-science-cyber-security/
- https://tdwi.org/articles/2019/07/22/adv-all-rise-of-data-security-scientist.aspx
- https://tdwi.org/articles/2018/01/16/adv-all-cybersecurity-plus-data-science-future-career-path.aspx
- https://www.youtube.com/watch?v=5jpgMXt1Z9Y