Queen Mary
University of London
Science and Engineering

ECS7025P Ethics, Regulations and Laws in Advanced Data Processing and Decision Making

Week 1

Module Overview and Data Ethics Intro

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Learning Objectives:

- Module objectives, module assessment & how we will engage as a group
- In class learning check tests
- Importance of Ethics, Regulation and Laws in Advanced Digital Information Processing and Decision Making
- Understanding data ethics and the need for a ethical framework

Lectures and tutorials for the module

Lecture& Seminar – Wednesday 10-12- online (Teams)

Tutorial (Assignment related)- Wednesday 5-6 (online, Teams)

Monday 10.30- Optional drop in session with lecturer- in campus on request

Assessment

Assessed Coursework

Title	Value	Type	SITS Assessment Code
In-class learning check-tests	30.0	Assignment	1
Case Study (Group)	20.0	Assignment	2
Coursework (Individual)	50.0	Assignment	3

Data Science- Good and Bad

Data Science has become an integral part of our lives, as this inter-disciplinary field provides the capability to solve problems by gaining knowledge and insights from the underlying structures within datasets.

One of the benefits of data science is that it allows businesses and consumers to make informed decisions based on analysis conducted on previous data. However, we have to ask ourselves the following questions:

- “Does my analysis of the dataset infringe on a user’s privacy?”
- “Does the use of a particular dataset lead to ethical issues?
- “Is the dataset accurate and fit for purpose?”

IMPORTANT

These are just some of the concerns that we as data scientists need to consider when we generate, analyse and disseminate data.

As a data scientist, you **must also be aware of privacy** and data protection laws, which will influence how you will produce statistics.

In relation to this, the objective of this course is to provide you with an understanding of the key ethical and legal issues as well as challenges that you might face when working on a data science project.

The course will also provide insights on how to avoid some of these issues based on the Data Ethics framework by gov.uk.

Then what is data ethics?

Data Ethics is concerned with the values and methods that are adopted when we generate, analyse and disseminate data.

Hence, a fundamental objective of data ethics is to ensure that you consider the social and legal implications of how and for what purpose you use the data and algorithms as a data scientist.

Ethics

Ethics is based on well-founded standards of right and wrong that prescribe what humans ought to do, usually in terms of rights, obligations, benefits to society, fairness, or specific virtues.

Being ethical is also not the same as following the law.

The law often incorporates ethical standards to which most citizens subscribe. But laws, like feelings, can deviate from what is ethical.

Data Scientist will face ethical situations!

Throughout your career as a data scientist, there will be many occasions where you will need to decide what is acceptable when an ethical situation arises. The following case study provides an example of this.

What is Data Ethics in reality?

- Working as data processing related professionals, there will be many occasions where you will need to make judgement on whether there are ethical conflicts.

- Please watch the video of Cambridge Analytica case

Why an ethical framework for emerging technologies

Emerging technologies such as AI present enormous opportunities for humanity.

AI and computer learning technology give rise to perhaps the largest array of ethical issues in modern history.

But they may well come with substantial risks as well, some of which may as yet be hard to detect.

Agreeing an ethical framework to guide the development of applications in an area of emerging technology seems sensible: such a framework won't eliminate risks but it could well reduce their likelihood and potential impact.

Important

Modern life runs on intelligent algorithms.

The data-devouring, self-improving computer programmes that underlie the artificial intelligence revolution already determine Google search results, Facebook news feeds and online shopping recommendations.”

There is a feeling that computers and algorithms simply can’t be biased in the same way humans are. **However, that’s not the case**. Biases have cropped up in a number of intelligent algorithms that deeply impact people’s lives.

Example1

Predpol, which is designed to predict when and where crimes will take place. However, it was found that the program had a bias for sending officers to neighborhoods with a high proportion of people from racial minorities, regardless of the crime rate. Furthermore, this can quickly become a confirmation bias as the data being fed into such a system is based on its previous choices.

Example 2

Another program found to carry a bias in the justice system is COMPAS, which is used to guide court sentencings. There are dozens of prominent programs that are known to carry an unintentional bias. Biases can even be trained into AI programs, creating a system that is presented as unbiased but is infact maliciously designed.

- According to **an investigation by the BBC**, women with darker skin are more than twice as likely to fail the automated United Kingdom passport rules than fair-skinned men when submitted online through the nation's automated government checker.

UK Passport Photo Checker Shows Bias Against Dark-Skinned Women

OCT 09, 2020 JARON SCHNEIDER

Example 3- UK passport checker

The United Kingdom offers an online service to submit your own images for use on passports, which would theoretically allow a person to get their passports more quickly. If you follow **a set of guidelines**, a person could also avoid paying to have a photo taken of them if they have the means to photograph themselves at home. Those guidelines include having a neutral expression, keeping a closed mouth, and looking directly at the camera. If a photo is submitted that does not meet all of the criteria, it is rejected as being “poor quality.”

Example 4

Another program found to carry a bias in the justice system is COMPAS, which is used to guide court sentencings. There are dozens of prominent programs that are known to carry an unintentional bias. Biases can even be trained into AI programs, creating a system that is presented as unbiased but is infact maliciously designed.

Ethics vs compliance

An ethical framework is a set of principles that can provide a solid base for applications that are consistent with the accepted social norms and moral principles in the society they are developed in.

In the UK at least, these include honesty, fairness and human rights. In other words, ethical frameworks are about “doing good”, or perhaps more accurately “not doing harm”.

Working for the greater good of the collective

Ethics In a business context …

In business, ethics involves how an organisation and its employees conduct themselves. It's not necessarily the same as compliance (with regulations or standards).

You can be compliant and still be unethical, for instance. And in an area of emerging technology there may well not be regulations and standards available to comply with. At this stage, all an organisation has to guide them may be an ethical framework.

Ethics for technology

If an ethical framework is to be useful in an area of emerging technology, **it needs to be accepted prior to any business activity that uses the technology**.

It’s needed when the initial business case for a new product or service that uses an emerging technology is being developed. It’s needed during the development phases.

And it’s needed when the final product or service is rolled out, or when it is bought by a third party. It’s not something that can be bolted on as an afterthought.

The need for ‘ethical by design’.

Any product or service in an emerging area of technology needs to be “ethical by design”.

Facebook might look very different today had it taken this approach

Cambridge Analytica/Facebook Case

Facebook's Cambridge Analytica data scandal, explained - YouTube

In class learning check test- 300 words

Discuss:

- *What are your thoughts? How do you feel about it?*
- *List down what concepts come into violation*
- *Do you think it is acceptable that an organisation can use personal data in the way as in this case? If not what should be done?*

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