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3. What are Ethics?

- Ethics is a branch of Philosophy - It systematizes right and wrong.
- Deciding right from wrong is tricky. It involves choosing a metric to compare against, such as the "greatest good" - the best behaviour yields the greatest good.



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4. What are Ethics?

- Stoicism** - behaviour that brings about contentment and serenity achieves the greatest good.
- Hedonism** - behaviour that maximizes pleasure and minimizes pain achieves the greatest good.
- Utilitarianism** - behavior that maximizes a positive effect, e.g. happiness, achieves the greatest good.
- This isn't a full ethics course, so we can't review all the theories.
- That said, we'll press on and use utilitarianism as our focus point.



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5a. Utilitarianism



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5b. Utilitarianism

PROBLEMS FOR
UTILITARIANISM

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6. Relation to Data Science

Ethical questions related to the application of domain expertise to problems at hand.

The way in which data is collected, processed, cleaned.

Ethical questions related to research goals and methods.

Credit: Shelley Palmer & Crata.io

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7. Relation to Data Science

Ethical questions related to the application of domain expertise to problems at hand.

The way in which data is collected, processed, cleaned.

Ethical questions related to research goals and methods.

Questions surrounding application of ML and A.I. in general.

Ethical questions related to the application / use of statistics.

Credit: Shelley Palmer & Crata.io

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8. Importance & Fairness

- Ethics becoming increasingly important as we relinquish human decision making responsibilities to algorithms.
- These systems must operate in an ethical fashion.
- Let's avoid the "tyranny of algorithms".
- Mistakes have already been made. Perhaps unknowingly, a utilitarian style approach to building automated systems has been adopted by many.
- This is because learning systems are usually trained with a singular purpose in mind – to achieve the best predictive accuracy. Consider an example.



9. New Framework

GDPR

- How long it can be kept.
- That it should be maintained in a secure manner.
- That its integrity and data validity must be preserved.
- That our consent must be sought before that data can be used.
- The right to be informed.
- The right of access to our data.
- The right to erase data held about us.
- The right to demand our data repaired if erroneous.
- The right to object.
- Plus rights related to how automated systems use our data.



9a. GDPR

- GDPR is a legally enforceable framework that complements the ethical considerations we should already be making as data scientists.
- With GDPR in place, we can ask a question of ourselves when facing a data science problem: is it ethically acceptable and legal to apply data science to the problem?
- Is the potential application fair?



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9b. GDPR



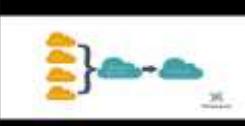
GDPR: Everything you need to know

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10. Consent

- Consent is becoming an increasingly important issue in data science.
- If data is being collected about us all the time, does that mean we consent to all it's potential uses?
- GDPR would now suggest that direct consent is needed if the data is to be processed in a new way.
- What about data stored in mathematical models – users have rights over how there data is used here too.
- Consent is at the heart of any data science activity that involves people and their data.



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11. GDPR & A.I.

- GDPR presents some unique challenges to A.I.
- One important issues is related to the training of intelligent algorithms. These learn from vast quantities of historical data.
- The data is used to build what we called models.
- Under GDPR these models are derivatives of user data, thus users have rights over them.
- This can raises ethical questions.



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12. Security, Privacy, Anonymity



Windows taskbar at the bottom shows various application icons.

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13. Legal Consequences

- When privacy and anonymity are overlooked, things can go very wrong.
- For example, the Cambridge Analytica scandal. Here a company exploited multiple data sources to probe & manipulate our emotions.
- The legality of these actions has been questioned & fines levied – yet the ethical impact is profound.
- It has raised concerns about the validity of elections, discourse, and the stability of our democracy.
- All brought about by a small number of data scientists.



Windows taskbar at the bottom shows various application icons.

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14. Ethical Consequences



Windows taskbar at the bottom shows various application icons.

15. Code of Ethics

Why develop a data science code of ethics?

Olivia Lee
General Secretary
BPS
2018

15. Code of Ethics

- UK Government developed Data Ethics Framework

UK GOVERNMENT
Data Ethics Framework

16. Resources

SAS GLOBAL FORUM 2019

Ethical Hierarchy of Data Science

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17. Summary

We've considered:

- What Ethics is.
- Covered some introductory ethical theories.
- Explained the importance of ethics in data science.
- Been made aware of the legal frameworks within which we should operate ethically.
- Heard about GDPR, codes of ethics, and the consequences of discarding ethical considerations.

1. Legal Framework (GDPR) → 2. Code of Conduct → 3. Governmental & Personal Ethical Framework
