# Ethics

COMP90042

Natural Language Processing

Lecture 22

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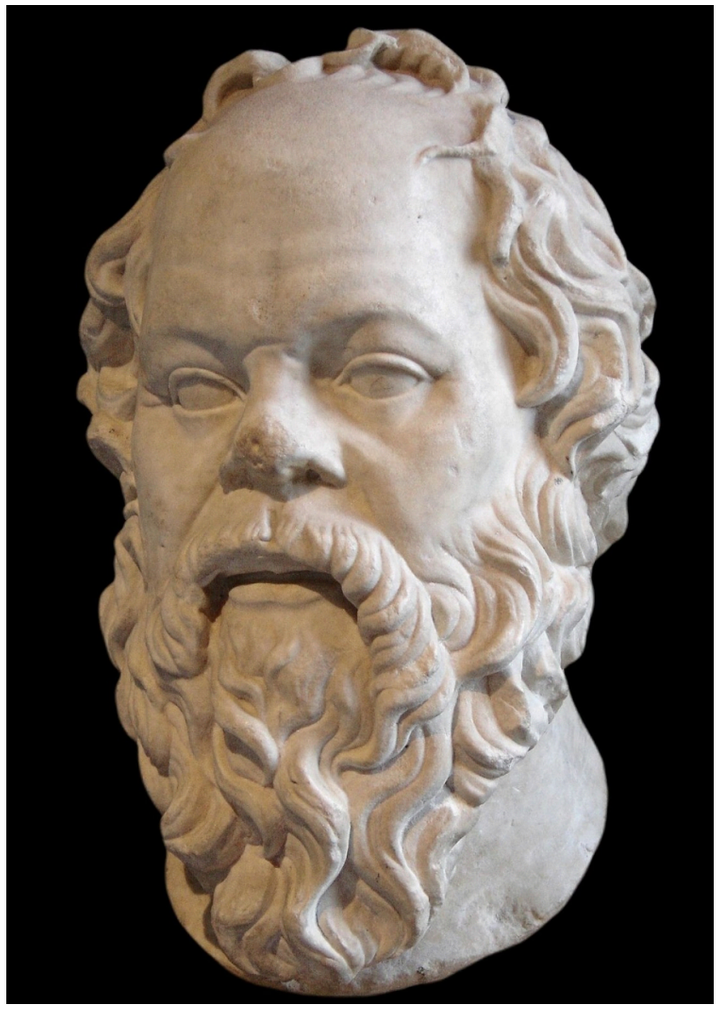
# What is Ethics?

*How we ought to live* — Socrates

- What is the right thing to do?
- Why?



# Why Should We Care?

- AI technology is increasingly being deployed to real-world applications
- Have real and tangible impact to people
- Whose responsibility is it when things go bad?

# Why Is Ethics Hard?

- Often no objective truth, unlike sciences
- A new philosophy student may ask whether fundamental ethical theories such as utilitarianism is right
- But unlikely a new physics student would question the laws of thermodynamics
- In examining a problem, we need to think from different perspectives to justify our reasons

# Learning Outcomes

- Think more about the application you build
  - Not just its performance
  - Its social context
    - Its impact to other people
    - Unintended harms
- Be a socially-responsible scientist or engineer

# Outline

- Arguments against ethical checks in NLP
- Core NLP ethics concepts
- Group discussion

# Arguments Against Ethical Checks in NLP

# Should We Censor Science?

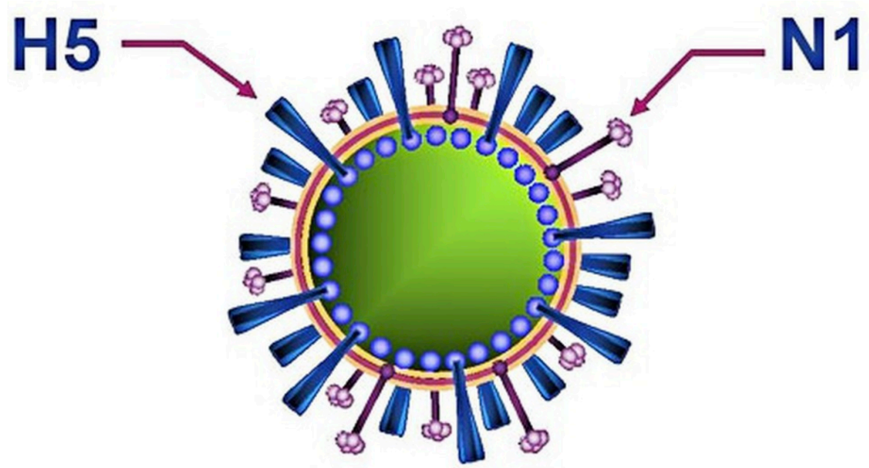
- A common argument when ethical checks or processes are introduced:
  - Should there be limits to scientific research? Is it right to censor research?
- Ethical procedures are common in other fields: medicine, biology, psychology, anthropology, etc

# Should We Censor Science?

- In the past, this isn't common in computer science
- But this doesn't mean this shouldn't change
- Technology are increasingly being integrated into society; the research we do nowadays are likely to be more deployed than 20 years ago

# H5N1

- Ron Fouchier, a Dutch virologist, discovered how to make bird flu potentially more harmful in 2011
- Dutch government objected to publishing the research
- Raised a lot of discussions and concerns
- National policies enacted

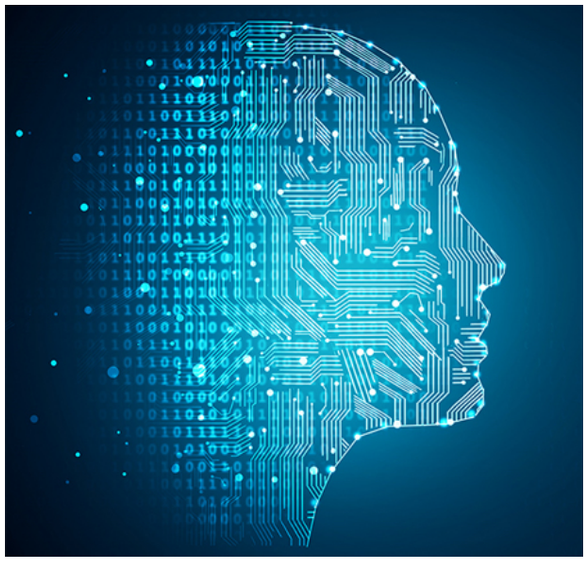


# Isn’t Transparency Always Better?

- Is it always better to publish sensitive research publicly?
- Argument: worse if they are done underground
- If goal is to raise awareness, scientific publication isn’t the only way
  - Could work with media to raise awareness
  - Doesn’t require exposing the technique

# AI vs. Cybersecurity

- Exposing vulnerability publicly is desirable in cyber-security applications
  - Easy for developer to fix the problem
- But the same logic doesn't always apply for AI
  - Not easy to fix, once the technology is out



# Core NLP Ethics Concepts

# Bias

- Two definitions:
  - Value-neutral meaning in ML
  - Normative meaning in socio-cultural studies
- Ethics research in NLP: harmful prejudices in models
- A biased model is one that performs unfavourably against certain groups of users
  - typically based on demographic features such as gender or ethnicity

# Bias

- Bias isn't necessarily bad
  - Guide the model to make informed decisions in the absence of more information
  - Truly unbiased system = system that makes random decisions
  - Bad when overwhelms evidence, or perpetuates harmful stereotypes
- Bias can arise from data, annotations, representations, models, or research design

# Bias in Word Embeddings

- Word Analogy (lecture 10):
  - v(man) - v(woman) = v(king) - v(queen)
- But!
  - v(man) - v(woman) = v(programmer) - v(homemaker)
  - v(father) - v(mother) = v(doctor) - v(nurse)
- Word embeddings reflect and **amplify** gender stereotypes in society
- Lots of work done to reduce bias in word embeddings

# Dual Use

- Every technology has a primary use, and unintended secondary consequences
  - nuclear power, knives, electricity
  - could be abused for things they are not originally designed to do.
- Since we do not know how people will use it, we need to be aware of this duality

# OpenAI GPT-2

- OpenAI developed GPT-2, a large language model trained on massive web data
- Kickstarted the pretrained model paradigm in NLP
  - Fine-tune pretrained models on downstream tasks (BERT lecture 11)
- GPT-2 also has amazing generation capability
  - Can be easily fine-tuned to generate fake news, create propaganda

# OpenAI GPT-2

- Pretrained GPT-2 models released in stages over 9 months, starting with smaller models
- Collaborated with various organisations to study social implications of very large language models over this time
- OpenAI's effort is commendable, but this is voluntary
- Further raises questions about self-regulation

# Privacy

- Often conflated with anonymity
- Privacy means nobody know I am doing something
- Anonymity means everyone know what I am doing, but not that it is me

# GDPR

- Regulation on data privacy in EU
- Also addresses transfer of personal data
- Aim to give individuals control over their personal data
- Organisations that process EU citizen's personal data are subjected to it
- Organisations need to anonymise data so that people cannot be identified
- But we have technology to de-identify author attributes

# AOL Search Data Leak

- In 2006, AOL released anonymised search logs of users
- Log contained sufficient information to de-identify individuals
  - Through cross-referencing with phonebook listing an individual was identified
- Lawsuit filed against AOL

# Group discussion

# Prompts

- Primary use: does it promote harm or social good?
- Bias?
- Dual use concerns?
- Privacy concerns? What sorts of data does it use?

- Other questions to consider:
  - Can it be weaponised against populations (e.g. facial recognition, location tracking)?
  - Does it fit people into simple categories (e.g. gender and sexual orientation)?
  - Does it create alternate sets of reality (e.g. fake news)?

# Automatic Prison Term Prediction

- A model that predicts the prison sentence of an individual based on court documents

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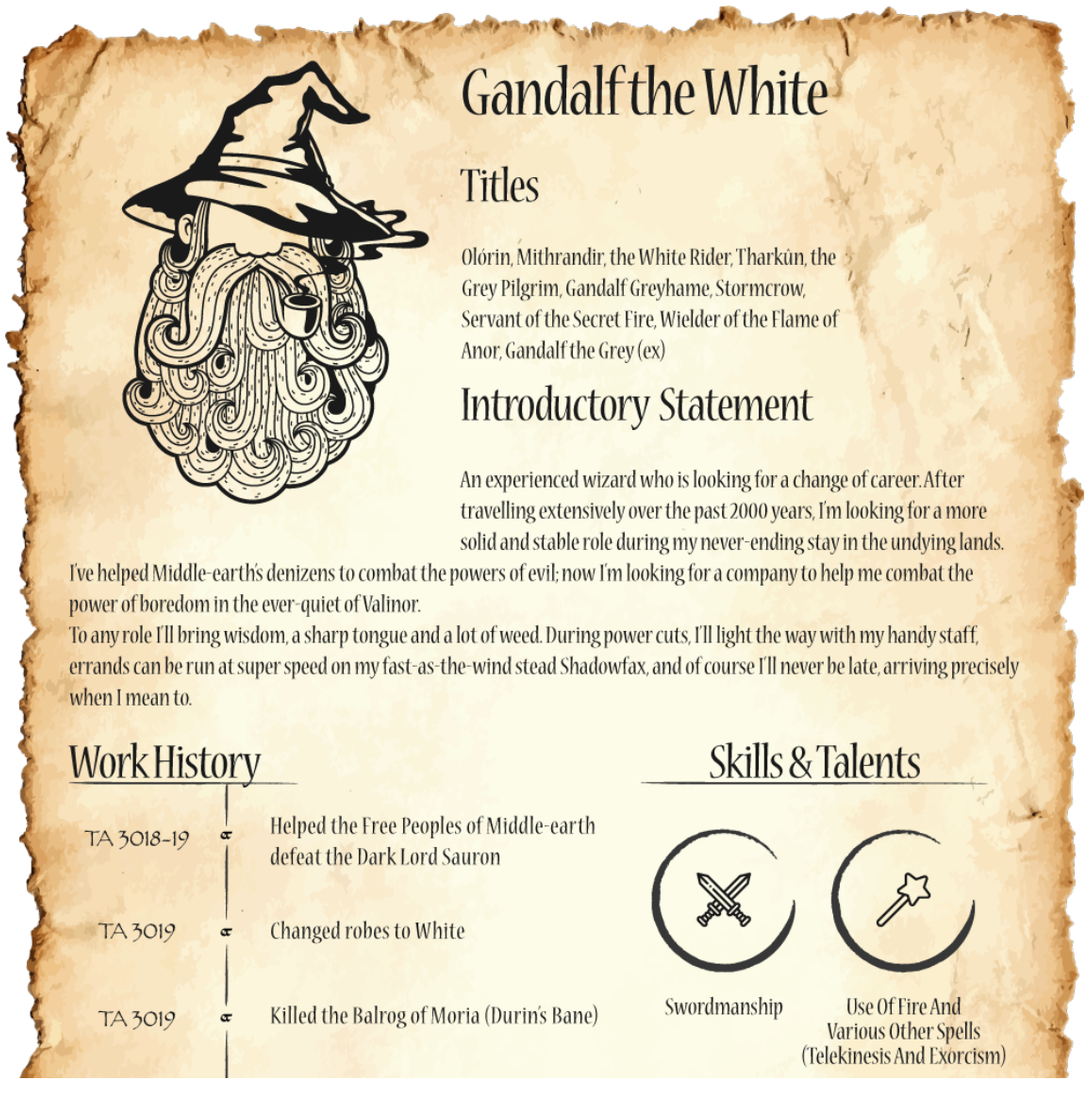
# Automatic CV Processing

- A model that processes CV/resumes for a job to automatically filter candidates for interview

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# Language Community Classification

- A text classification tool that distinguishes LGBTQ from heterosexual language
- Motivation: to understand how language used in the LGBTQ community differs from heterosexual community

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# Take Away

- Think about the applications you build
- Be open-minded: ask questions, discuss with others
- NLP tasks aren't always just technical problems
- Remember that the application we build could change someone else's life
- We should strive to be a socially responsible engineer/scientist

# Readings (Optional)

- *The Elements of Moral Philosophy* by James and Stuart Rachels