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# CS4040: Research Ethics

*Ehud Reiter*

# Contents

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- What is research ethics?
- General principles
- Research ethics at Aberdeen University

# Research Ethics

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- Conducting research in an ethical fashion
- Of course ethics applies to many more things than research!
  - But focus on research here

# Bad Research Ethics (1)

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- Tuskegee Syphilis Study (USA)
  - US Public Health Service
  - Studied progression of syphilis in 399 black men for 40 years (1932-1972)
    - *Research question:* What happens to people with syphilis over a period of decades
  - Subjects not told had syphilis or treated!
    - Penicillin effective cure from 1947
    - Subjects died, as did wives and children

# Poor Research Ethics (2)

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- Milgram experiment (psychology)
  - Subjects told to give electric shocks to people (confederates)
    - No real shocks, but confederates acted like they were in pain
    - *Research question:* how far will people go when “just following orders”
  - Subjects under a lot of emotional stress
    - Not appropriate for research subjects

# Dubious Research Ethics (3)

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- Facebook manipulated news feeds
  - Removed positive words (eg “love”) from one group of users
  - Removed negative words (eg “hurt”) from another group
  - *Research question:* does this impact emotional state?
- Subjects did not agree to participate or even know about the experiment

# Ethical Approval

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- In 2025, academic research projects need *ethical approval* if they involve people
  - Applies to student research projects
- *Ethics committee* responsible for ensuring that research is ethical.
  - Details vary by country, institution, field

# Principles of Ethical Research

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1. Informed consent
2. No coercion
3. Protection from harm
4. Personal information protected
5. Benefits outweigh costs
6. Report results honestly

# Informed Consent

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- Subjects should understand the research and agree to participate
  - Research explained in understandable way
    - Typically via a consent form in CS research
    - Readable! Not like Terms and Conditions
  - Consent from guardians for people (eg, children) who cannot give consent
  - Get consent BEFORE experiment

# Informed Consent

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- Sometimes not possible
  - Experiment requires deception (eg Milgram)
  - Subjects don't engage sufficiently to provide informed consent
    - Eg, A/B testing of different colours on website
- Ethical approval still possible, not easy
  - BPS has guidelines on ethics of deception
  - No good guidelines on ethics of A/B testing
  - *Advice:* get informed consent if at all possible!

# No Coercion

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- Subjects cannot be forced or pressured to take part in an experiment
  - Nazis experimenting on concentration camp
- Subjects free to withdraw from experiment at any time
  - Experimenter cannot pressure them to stay
    - Even if not enough time to recruit replacements

# Protection From Harm

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- Research should not harm people
- Medicine: clinical trials of new drugs may have unexpected nasty side effects
  - Many protocols, regulations, etc
- Computing: avoid experiments that harm people
  - Don't stress/upset subjects

# Protection from Harm

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- Third parties should also be protected
- Example: evaluation of medical decision support system should not harm patients
  - Even if system makes mistakes
  - Detect mistakes before they impact patient care

# Personal Information

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- Personal information cannot be published
  - Part of data protection
- We can publish aggregate statistics
  - Sufficient for evaluation
- Anonymise names and personal details
- Comply with data protection laws

# Personal Information

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- Sometimes aggregate information is not very anonymous
  - Don't report results by gender if only one subject is female
  - Don't report results by full UK postcode
    - OK to use partial postcode (eg, AB24)

# Cost-Benefit

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- If any of above principles broken, researchers need to show that the benefit of the research outweighs cost
  - Research involving deception
  - Research (eg, new drugs) that could harm someone
  - Etc
- Researchers also need to minimise harm
  - Tell truth as soon as possible
  - Screen drugs for harmful side effects

# Report Results Honestly

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- Don't fabricate results or otherwise lie!
  - Disciplinary offense, for staff as well as students
  - Destroys academic careers
- Don't “tweak” results to make them look a bit better

# Bad Research Ethics (1)

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  - Subjects not told had syphilis or treated!
    - Penicillin effective cure from 1947
    - Subjects died, as did wives and children

# Ethical analysis

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- Tuskegee Syphilis Study (USA)
  - No informed consent
  - Subjects and third parties (wives and children) were harmed
  - Costs (eg, dead/disabled children) higher than benefits

# Poor Research Ethics (2)

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- Milgram experiment (psychology)
  - Subjects told to give electric shocks to people (confederates)
    - No real shocks, but confederates acted like they were in pain
    - *Research question:* how far will people go when “just following orders”
  - Subjects under a lot of emotional stress
    - Not appropriate for research subjects

# Analysis

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- Milgram experiment (psychology)
  - No informed consent before study
    - Subjects debriefed afterwards
  - Subjects coerced to stay if wanted to quit
  - Subjects were harmed psychologically
  - Cost-benefit is debatable
    - Most subjects felt benefits outweighed cost

# Dubious Research Ethics (3)

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- Facebook manipulated news feeds
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- Subjects did not agree to participate or even know about the experiment

# Analysis

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- Facebook manipulated news feeds
  - No informed consent before study
    - No debriefing afterwards
  - Subjects maybe harmed psychologically?
    - Subjects in no-positive group made unhappy?
    - Extent not clear, much less than Milgram
  - Cost-benefit dubious for society?
    - I cannot read Facebook's defense because I don't have a Facebook account

# Research Ethics at Aberdeen

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- Ethics committees must approve research with ethical concerns
- Computing Science under College of Physical Sciences ethics committee
  - Name may change
  - I am a member (CS rep)
  - <https://ehudreiter.com/2017/08/21/ethics-ab-testing/> (example of issue)

# Ethical application

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- <https://www.abdn.ac.uk/staffnet/research/support/research-support/research-governance/ethical-approval-for-research/>
- Checklist (do you need ethical approval)
  - Forms (if you need approval)
- UG students email docs to Prof Reiter
  - Annex A, B, C, and (D or E)
  - Use email, not worktribe
  - Email Reiter, not copsethics

# Procedure

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- Fill out checklist
- If answer YES to any checklist question, fill out and ethical approval form
- I will approve, approve subject to changes, or reject

# Changes

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- Most common requests
  - Changes to consent form/procedure
  - Provide more details about human subjects (how many, how recruited, etc)
  - Don't publish info because not anonymous
    - Eg, gender breakdown if only one girl

# NHS Ethics

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- Experiments which involve NHS (patients or employees) must be ethically approved by NHS
- Much more detailed and time-consuming than usual procedures!
  - *Advice:* avoid if possible!

# Ethical Approval Timeline

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- Approve straightforward projects quickly
  - Generally within 2-3 weeks
  - Goal, not guarantee
  - Within 1 week for UG projects
- Complicated ethics takes longer
  - Deception, possibility of harm, etc
  - Can easily take several weeks or month
  - Plan accordingly!

# Ethical approval is required!

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- If you do an experiment that requires ethical approval, you must obtain it
  - Human subjects, sensitive data, etc
- You **will fail** if your project requires ethical approval and you do not have this