Scientific Ethics

Research Methods for Human-Centered Computing

Scientific Ethics

Today's goal:

Teach you how to conduct research responsibly

Outline:

- Authorship credit, forms of plagiarism and fraud
- Basic ethical principles of human subjects research
- Writing an IRB proposal

Honest research

Authorship credit, plagiarism, and research fraud

Honest research

Fundamental principle: you are responsible for what you publish:

- Discuss authorship credit
- Be aware of plagiarism
- Be aware of research fraud

Authorship

Who should be credited?

- Research assistants?
- External advisors?
- Person who provided funding?

Authors are responsible for the content of their publications

Manuscript must be approved by all authors before submitting the paper

Make strategic use of acknowledgements

Example

"Principal authorship and other publication credits accurately reflect the relative scientific or professional contributions of the individuals involved, regardless of their relative status...

Minor contributions to the research or to the writing for publications are acknowledged appropriately, such as in footnotes or in an introductory statement."

–Ethical Code (effective June 1, 2003) of the APA

Example

The International Committee of Medical Journal Editors recommends four criteria:

> "Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
>
> Drafting the work or revising it critically for important intellectual content; AND
>
> Final approval of the version to be published; AND
>
> Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved."

Authorship

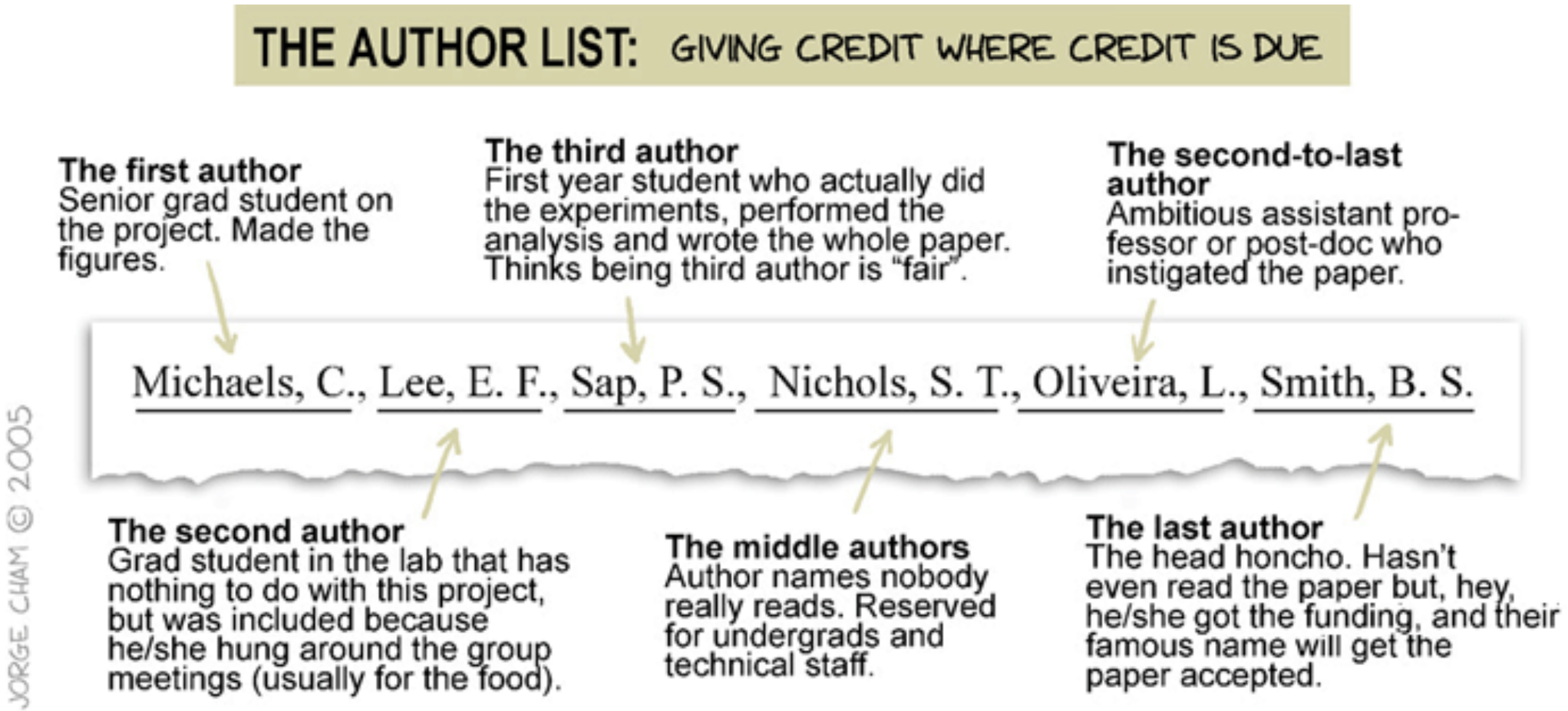
In what order? Conventions differ per field!

- Person with most significant contribution first
- Advisor last by default
- Random/by last name
- Specify the exact contributions

This can be a political decision

When in doubt: ask your advisor

Authorship


THE AUTHOR LIST: GIVING CREDIT WHERE CREDIT IS DUE
The first author
Senior grad student on the project. Made the figures.
The third author
First year student who actually did the experiments, performed the analysis and wrote the whole paper. Thinks being third author is "fair".
The second-to-last author
Ambitious assistant professor or post-doc who instigated the paper.
Michaels, C., Lee, E. F., Sap, P. S., Nichols, S. T., Oliveira, L., Smith, B. S.
The second author
Grad student in the lab that has nothing to do with this project, but was included because he/she hung around the group meetings (usually for the food).
The middle authors
Author names nobody really reads. Reserved for undergrads and technical staff.
The last author
The head honcho. Hasn't even read the paper but, hey, he/she got the funding, and their famous name will get the paper accepted.
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Plagiarism

"Psychologists do not claim the words and ideas of another as their own; they give credit where credit is due."

Pg. 349 APA Manual

Plagiarism is not just copying paragraphs of text!

Can even occur when you summarize or paraphrase things **without** giving credit to the person from whom you got the information

Citing the source elsewhere in the paper is not "giving credit"

When you copy verbatim, use quotation marks

Example

Hi [redacted],

I see that you are the editor-in-chief for the [redacted journal]. I recently came across this paper titled "[redacted]", which is available online in pre-print.

Since it's not yet officially published, I was wondering if you could still ask the authors to change part of their introduction, as it is rather similar to the intro of the [redacted paper] that [redacted] and I wrote. See attached images.

Example

1 Introduction

Traditionally, the field of recommender systems has evaluated the fruits of its labor using metrics of algorithmic accuracy and precision (see Chapter **??** for an overview of recommender systems evaluation practices). Netflix organized a million-dollar contest for just this goal of improving the accuracy of its movie recommendation algorithm [7]. In recent years, however, researchers have come to realize that the goal of a recommender system extends well beyond accurate predictions; its primary real-world purpose is to provide personalized help in discovering relevant content or items [72].

This has caused two important changes in the field. The first change was incited by McNee et al. [83] who argued that "being accurate is not enough" and that one should instead "study recommenders from a user-centric perspective to make them not only accurate and helpful, but also a pleasure to use" (p. 1101). McNee et al.

Example

The second change is a broadening of the scope of research regarding the *system aspects* to investigate beyond just the algorithm of the recommender. In essence, recommender systems apply algorithms on user input with the goal of providing some kind of personalized output. This means that aside from the algorithm, there are two important interactive components to any recommender: the mechanism through which users provide their input, and the means by which they receive the system's output. Realizing the importance of these interactive components, McNee et al. [84] suggested that researchers should put more focus on the "Human-Recommender Interaction" and investigate these interactive components. Moreover, in his RecSys 2009 keynote Martin emphasized the importance of this endeavor: he argued that the interactive components of a recommender account for about 50% of its commercial success, while he provocatively estimated that the algorithm accounts for only 5% [81]. Indeed, research has shown that the preference elicitation mechanism and the presentation of recommendations have a substantial impact on users' acceptance and evaluation of recommender systems as well as their usage behavior (cf. [19, 67, 96]).

Example

RECOMMENDER systems provide a user with the content she or he might be interested in. They have become increasingly popular because of their successful applications in the e-commerce field, such as with Amazon and eBay. Recommender systems have been introduced in the educational domain as a practical solution to help users find suitable content that can support their learning process [1]–[3]. Traditionally, recommender systems have been evaluated according to accuracy metrics in the Information Retrieval area. However, such evaluations do not answer the question whether the users are actually satisfied with the recommendations as indicated by the accuracy metrics. Recently, researchers have realized that the goal of a recommender system goes beyond the accuracy metrics [4], [5]. This has prompted two major changes in the field of recommender systems. The first change, indicated by McNee et al. [5], is that "being accurate is not enough". These authors also emphasized that researchers should "study recommenders from a user-centric perspective to make them not only accurate and helpful, but also a pleasure to use" [5]. The second change has been introduced as "a broadening of the scope of research regarding the system aspects to investigate beyond just the algorithm of the recommender" [4], [6]. Following this, McNee et al. suggest researchers to also study the aspects of "Human-Recommender Interaction" [7]. Martin [8] claimed in his keynote to the ACM RecSys 2009 conference that around 50% of a recommender's commercial success goes to the aspects of "Human-Recommender Interaction" while the algorithm matters for 5% only [8].

The importance of the user perspective has been realized even more in the educational domain [1], [9], [10]. Indeed, the main goal of the educational recommender systems extends well beyond accurate predictions and should also take into account quality metrics such as usefulness, novelty, or diversity of the recommendations [10].

Although the importance of user-centric evaluations has become quite clear and vital, the majority of recommender system studies still solely report the traditional, data-centric evaluation results. Many of them are based on some implicit feedback such as Click Through Rate (CTR) [11], [12], which hardly reflect users' satisfaction and the perceived usefulness of the recommendations made for them. However, traditional offline user-centric evaluations, such as those based on CTR, are more straightforward to conduct than

Self-plagiarism

"Original work" principle:

- Submit work to one journal/conference at a time
- You may submit non-archival work (e.g. workshop paper, dissertation) for archival publication
- You may submit work that substantially improves upon existing work (in our field: 30% rule)
- Always acknowledge the existing work (failure to self-cite is also plagiarism!)
- Substantial (= more than a few sentences) verbatim copying from your own archival work is not allowed

Example

Dear program chairs,

There is an issue with [redacted conference] submission [redacted number].

One of the reviewers discovered that this paper is almost verbatim a resubmission of a paper that has been presented at the [redacted conference].

I'm not sure to what extent we should consider this to be an "archival" publication, but if we do, this paper is 100% self-plagiarism...

Example

Hi Bart,

Since we consider [redacted conference] as the top conference of the field, we should expect original work. The CFP was very clear about it:

> Submitted work should be original. Simultaneous submissions to other conferences or journals is explicitly prohibited by ACM policies. However, technical reports or ArXiv disclosure prior to or simultaneous with [redacted conference] submission, is allowed, provided they are not peer-reviewed. Please refer to the ACM Publication License Agreement for further details.

[Redacted conference] is not ArXiV or a TR, so the paper should be rejected as not original.

Another example

Dear Director of Publications,

I was asked to review manuscript [number] entitled [title] by [authors], which was submitted to [journal].

After reading the manuscript, I have concluded that this work is a case of self-plagiarism: large parts of the text have been copied verbatim from an earlier publication at [conference] titled [title] without any reference to this paper.

I have attached an annotated copy of the manuscript to this email. Yellow passages are copied verbatim, green passages are reworded but have the same intent as the original passage.

Another example

Dear authors,

Thanks again for submitting the above paper to [journal], a highly-ranked interdisciplinary journal. As required by the journal, your submission carries the following declaration

> "Declaration: [...] This paper is void of plagiarism or self-plagiarism as defined in Section 1 of ACM's Policy and Procedures on Plagiarism."

An attentive reviewer and a subsequent analysis with plagiarism detection software revealed however that a total of about 1 1/2 pages of your submission were plagiarized from [paper].

Another example

[journal] is the leading journal in the area of [area]. I attach your submission, a compilation of the plagiarized passages from your submission, and the [other article] with the plagiarized passages marked out in yellow.

Due to this severe act of plagiarism, I have no choice other than to reject your submission. I cc the victimized authors, and [university] administration to allow them to look into possible code of conduct violations.

Research fraud

General principle: Be honest about your research!

Illegal practices:

- Fake studies / fudged data
- Selective data

Bad practices:

- p-hacking
- selective reporting

Research fraud

In recent months, the scientific fraud allegations surrounding prominent Dutch social psychologist Diederik Stapel have intensified. The misconduct goes back to at least 2004 and involves the manipulation of data and complete fabrication of entire experiments. The fraudulent data are said to have been used in at least 30 published, peer-reviewed papers.

An interim report examines the scope of the misconduct and explores the academic culture that allowed Stapel to continue his fraudulent research behaviors for such an extended period of time.

Research fraud

The report indicates that the individuals most directly affected were masters and doctoral students working with Stapel, and unfortunately, a number of dissertations are thought to be based on fabricated data. In addition, colleagues of Stapel have also unknowingly used fabricated data. In these instances, Stapel would contact a colleague and indicate that he had a not-yet-analyzed dataset that fit perfectly with a research question the colleague was examining. Stapel would ask if the colleague was interested in analyzing and writing up the results, and in turn, he would be listed as co-author on the publication.

Research fraud

In either situation, there has been no evidence to suggest that students or other co-authors were aware of any misconduct.

The interim report states that three junior researchers in the psychology department became suspicious when they discovered irregularities in several of Stapel's published papers and brought the information to the head of the department. The report also states that several other junior researchers and faculty members raised concern previously, but these reports were not acted upon.

Research fraud

More info about this case:

https://www.nytimes.com/2013/04/28/magazine/diederik-stapels-audacious-academic-fraud.html

Research ethics

Basic ethical principles of human subjects research

Research ethics

Basic principles:

- Voluntary participation
- Informed consent
- Review of protocols by Institutional Review Board (IRB)

Outlined in National Research Act of 1974

Further clarified in Belmont Report of 1979

Participation

Voluntary participation = no pressure to participate

- E.g. it should not be a class requirement to participate in a particular study
- Nuance: is high payment a form of coercion?

Tell participants that they may stop at any time

- Nuance: experimenter's authority may inadvertently pressure participants to continue
- E.g. Milgram experiment

Informed consent

Informed consent:

- Participant must agree to their participation prior to participating
- Participant must be fully aware of the risks and benefits of participating

Difficult for archival data used for new research

- "Broad consent:" if the purpose is in line with original consent
- Question: do users give consent for research when they sign up for a service (e.g., twitter, Facebook)?

Informed consent

"Consent forms" include (from APA ethics code):

The purpose of the research, duration, procedures

Right to decline, withdraw; consequences of doing so

Potential risks of harm, discomforts, adverse effects

Prospective research benefits

Limits of confidentiality

Incentives for participation

Whom to contact with questions regarding the research and participants' rights

Informed consent

Traditionally, consent forms were signed by the participant

Online, this is cumbersome

For most of our research signed consent is not necessary

For other research it can be waived if the study has minimal risk of harm, OR if the signature would be the only identifying data collected

Typical replacement: a checkbox “I’ve read the form and agree to participate in this study”

What is harmful?

Physical harm

Anything that goes beyond everyday risks like sitting at a desk or walking down a hallway

E.g. side effects of drugs, physical injuries in an exertion study, epileptic episodes from rapidly moving images

Psychological harm

Unpleasant emotions, negative information about self

E.g. participation in Milgram study, bad test performance, recollecting negative online experiences

IRB process

All studies must be approved by the local IRB

- Every US research university has one
- Also national labs, hospitals, military, etc.

Research must be approved by IRB before the study is conducted

IRB process

All US funding agencies require IRB-approval for human-subjects research as a condition for funding

- Grant reviewers will review adequate protections as part of their review

Increasingly, conferences and journals require that submitted work is approved by IRB

- Reviewers are encouraged to bring up (research-)ethical issues regardless

IRB concerns

IRB review is only required if the work involves human subjects

New: now even if you use data collected by others!

The following things require special attention:

- Research with children
- Research with special populations (prisoners, pregnant women, elderly)
- You collect biologic specimens

IRB concerns

The following things require special attention (cont'd):

- You have financial or other connections to any part of the research (e.g. the research is sponsored by a company you own/work for)
- The use of deception

Note: being "vague" is not deception

You do not have to reveal the exact design of your study to participants

Deception

Some examples of deception:

- Misrepresenting the purpose of the study ("this study is about testing a game" — it is actually about racial bias)
- Making misleading explanations about equipment or procedures ("You will take an intelligence test" — it is actually a task to prime a certain concept)
- Using confederates (experimenters posing as participants, for control purposes)
- Secret observation (e.g. one-way mirror) or recording

No consent?

When using deception, there is no (fully) informed consent

- You hide aspects of the study, so participants are not fully informed about the study

This is only allowed if the study poses minimal risk

- Participants must still be informed about the risks

Moreover the study must have substantial benefits that can only be achieved through deception

Debriefing

When using deception, you must debrief participants

- Inform participants **after** the experiment (sooner = better!)
- Carefully delineate what was manipulated and measured

Mitigate potential concerns of participants

- Offer a chance to give feedback; they may feel duped!
- Allow them to retract their participation

You may want to ask about their suspicions

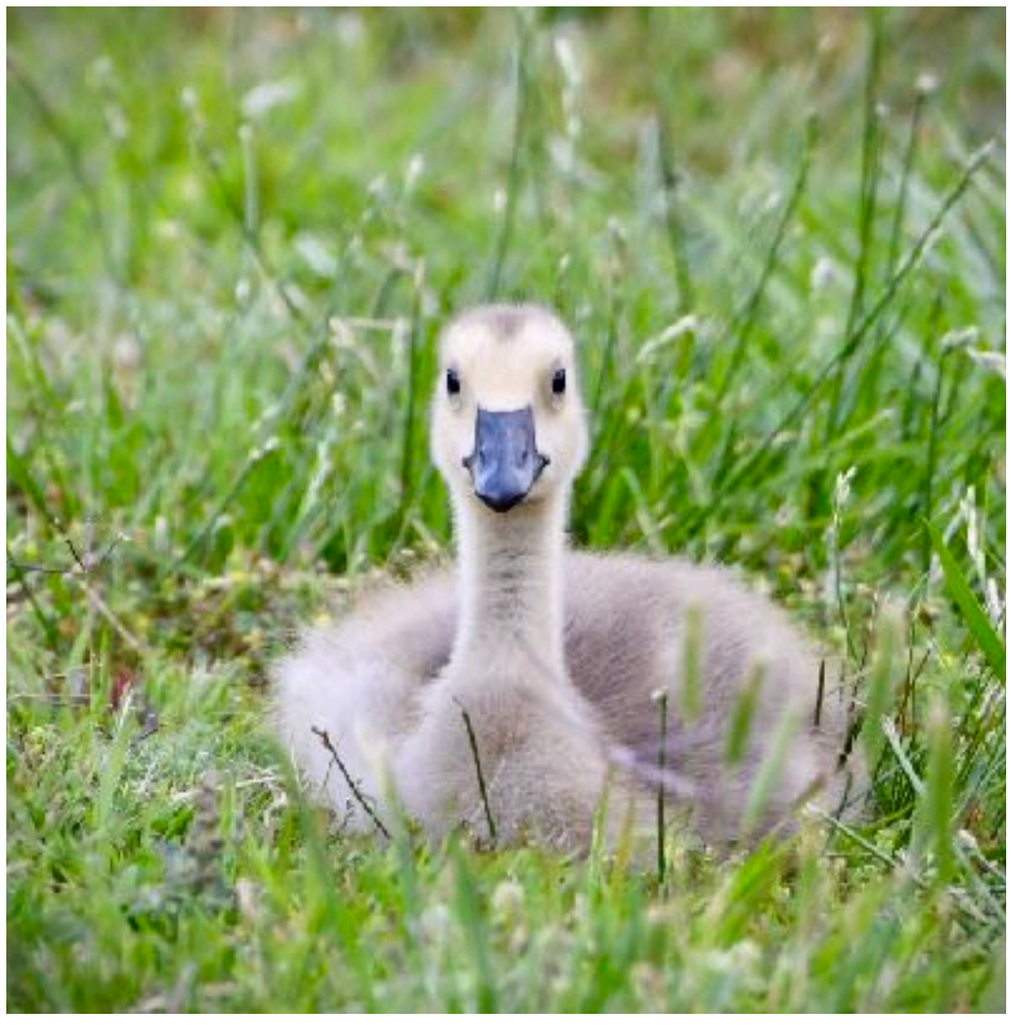
- And remove participants who "saw through" the deception

Example

Is this study ethical?

https://www.youtube.com/watch?v=sGgYEhA46VE

Start at 3:32, end at 9:10




FOCUS
AF MO MF
FULLY
WI FI

IRB proposal

Part of your research project proposal!

IRB proposal

There are three types of review:

- Exempt review
- Expedited review
- Full board review

Exempt review

Quickest review

For studies where participants are not at risk of criminal or civil liability, or damage to their financial standing, employability, or reputation if their responses were to be disclosed.

- Most of our research is exempt under category 2 (surveys) or category 3 (experiments)
- New: now also for secondary research uses! (cat 4 or 8)

Participants do not have to sign for consent

Exempt review

Surveys are exempt if:

Participants cannot be identified OR

Disclosure of responses outside the research would not place the subjects at risk OR

The research does not involve minors

Exempt review

Experiments are exempt if:

The intervention is benign AND

The intervention is described in the consent document OR the consent document states that the research involves deception

Expedited review

More thorough review

For interviews where participants are at risk of criminal or civil liability, or damage to their financial standing, employability, or reputation if their responses were to be disclosed, but...

> ...where protections will be implemented so that risks related to invasion of privacy and breach of confidentiality are no greater than minimal.

For our work, usually expedited under category 7

Signed consent is required, but can be waived

Expedited review

Used for studies with:

- Controversial topics (disclosed answers may pose e.g. reputation damage)
- Sensitive topics (participants may discuss e.g. mental health issues)
- Deception (you want to hide the general purpose of the study until afterwards — waive informed consent)

New: also for secondary research uses if data was collected for non-research purposes

Expedited review

"Protections":

- Keep identifying information (recruitment emails, demographics, consent signatures, etc.) separate from study data
- Link the two with a code (P1, P2, P3, etc)
- Password-protect audio recordings and transcripts
- Anonymize data on a rolling basis
- Delete all data once the project is finished

Full board review

Very thorough review

Usually for experimental medicines, invasive surgery, etc.

Typically does not apply to HCC research

IRB proposal

An IRB proposal consists of:

- An application form (different for exempt and expedited)
- A consent form
- A recruitment message
- Study materials (e.g. screenshots, survey questions, interview protocol)

Application is filled out via https://infoed.clemson.edu

Other forms at http://www.clemson.edu/research/compliance/irb/forms.html

Protocol narrative

Fill out either an exempt or expedited application via InfoEd

Exempt protocol

Personnel:

Primary Investigator: Knijnenburg, Bart (I should be in the system; skip my certification)

Also add: Your names + certifications

Exempt protocol

General questions:

2. Study Purpose: Take from study proposal

3. Potential benefit(s): Same (why is this interesting)

8. How participants will be identified: method of recruitment

9. Inclusion or exclusion criteria: who is eligible and who is not? How will you determine this?

11. Upload your recruitment script (flyer, email, post, etc.)

Exempt protocol

Informed consent:

1. Describe how consent is obtained

2. Upload the consent document (use the IRB template!)

3. Concealment: If you use concealment, you must include a debriefing form

    Note: you must tell participants that you use concealment, but not what the concealment entails

    If you don't want this, use the expedited protocol

Exempt protocol

Research method:

1. Indicate what data you will collect

2. Upload data collection instruments (surveys etc.)

4. Describe procedures

5. Total time to participate

Research sites: You may need permission!

Exempt protocol

Data management plan:

1. Not needed if you don't collect any identifiable information

2. If you do, explain how you will secure the data

3. And how long you will keep it

4. And whether you will share it with others

Expedited

Notable additional/different fields for expedited research:

Expedited Review Categories: 7 for most of our studies

Informed consent:

- You can waive consent altogether under a (rarely needed)
- You can waive the signature requirement under b (this is useful for online studies)
- You can waive specific parts of consent under d (this is useful when there is deception see also c)

Research Method: description of risks and mitigations under 7 and 8

Consent form

Download consent form (“Informed Consent -Adult”) from the IRB website

Note: the consent forms for exempt and expedited review are slightly different!

Make sure you edit the consent form to match your protocol narrative (fill in the blanks, remove the correct ORs)

Recruitment

Can be a flyer (to be posted), text blurb (to be listed online) or a script (face-to-face recruitment)

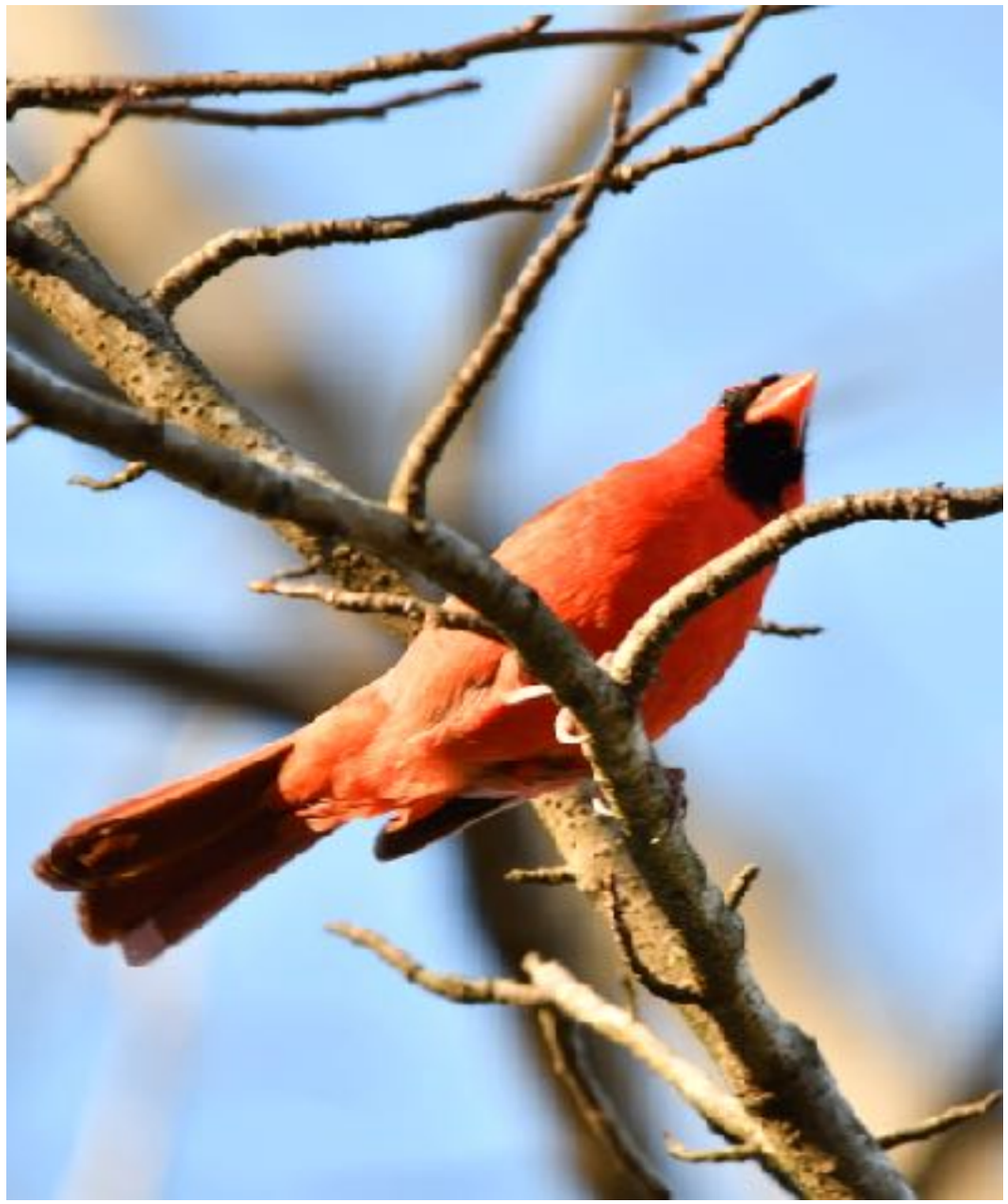
Approximate text:

> "You are invited to participate in an [type of] study about [topic]. The study is supervised by Dr. Knijnenburg, and will take about [XX] minutes. If you are interested in participating, please contact [name] at [email address]."

Study materials

Provide to the IRB:

- Materials regarding pre-study procedures (e.g. training)
- Prototype screenshots
- Questionnaire items
- Interview protocols
- Etc.



IRB proposal

Submit with your study proposal:

- Application (give me the ID number in the system)
- Consent form
- Recruitment message
- Study materials (as relevant for the IRB)