RESEARCH BOOTCAMP 2015: ETHICS AND PLAGIARISM
Talk’s Goals
Talk’s Goals

Cover the Basics
Talk’s Goals

Cover the Basics

Cover More Interesting Cases
Talk’s Goals

Cover the Basics

Cover More Interesting Cases

Not Be Completely Boring
Much (though not all) material or topics taken from CITI Training modules on RCR
What is Research Misconduct?

"research misconduct is defined as fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results."

US Office of Science and Technology Policy, 2000
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US Office of Science and Technology Policy, 2000
What is Research Misconduct?

“research...the record of data or results that embody the facts resulting from scientific inquiry, and includes, but is not limited to, research proposals, laboratory records, both physical and electronic, progress reports, abstracts, theses, oral presentations, internal reports, and journal articles."

US Office of Science and Technology Policy, 2000
What is Research Misconduct?

“Research misconduct does not include honest error or differences of opinion”

US Office of Science and Technology Policy, 2000
What is Research Misconduct?

“Research misconduct does not include honest error or differences of opinion”

intentionally

US Office of Science and Technology Policy, 2000
What is Research Misconduct?

“Research misconduct does not include honest error or differences of opinion”

intentionally
knowingly

US Office of Science and Technology Policy, 2000
What is Research Misconduct?

“Research misconduct does not include honest error or differences of opinion”

intentionally
knowingly
recklessly

US Office of Science and Technology Policy, 2000

“Not going to go over egregious cases of data falsification....you can Google them”

• Eating M&Ms (“whether individuals are inclined to consume more when primed with the idea of capitalism”) -- http://www.nytimes.com/2013/04/28/magazine/diederik-stapels-audacious-academic-fraud.html?pagewanted=all&_r=0

• Short conversations changing people’s minds regarding gay marriage rights - Back-of-the-envelope cost calculations for costs w.r.t. study compensation expenses resulted in discovery -- http://nymag.com/scienceofus/2015/05/how-a-grad-student-uncovered-a-huge-fraud.html

TL;dr: Don’t do it.
Code of Ethics

https://www.acm.org/about/code-of-ethics
Code of Ethics

- Contribute to society and human well-being.
- 
- 
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https://www.acm.org/about/code-of-ethics
Code of Ethics

- Contribute to society and human well-being.
- Avoid harm to others.

https://www.acm.org/about/code-of-ethics
Code of Ethics

- Contribute to society and human well-being.
- Avoid harm to others.
- Be honest and trustworthy.

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Code of Ethics

- Contribute to society and human well-being.
- Avoid harm to others.
- Be honest and trustworthy.
- Be fair and take action not to discriminate.

https://www.acm.org/about/code-of-ethics
Code of Ethics

- Contribute to society and human well-being.
- Avoid harm to others.
- Be honest and trustworthy.
- Be fair and take action not to discriminate.
- Honor property rights including copyrights and patent.

https://www.acm.org/about/code-of-ethics
Code of Ethics

• Contribute to society and human well-being.
• Avoid harm to others.
• Be honest and trustworthy.
• Be fair and take action not to discriminate.
• Honor property rights including copyrights and patent.
• **Give proper credit for intellectual property.**

https://www.acm.org/about/code-of-ethics
Code of Ethics

- Contribute to society and human well-being.
- Avoid harm to others.
- Be honest and trustworthy.
- Be fair and take action not to discriminate.
- Honor property rights including copyrights and patent.
- Give proper credit for intellectual property.
- Respect the privacy of others.

https://www.acm.org/about/code-of-ethics
Code of Ethics

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- Give proper credit for intellectual property.
- Respect the privacy of others.
- Honor confidentiality.

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https://www.acm.org/about/code-of-ethics
https://www.usenix.org/lisa/system-administrators-code-ethics

http://www.ieee.org/about/corporate/governance/p7-8.html
https://www.flickr.com/photos/jakerust/16650028818/

PLAGIARISM
Don’t cheat.

Slides from Matt Might’s grad orientation
What is cheating?
Ctrl-C, Ctrl-V
Cheating

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Other good reasons aside from credit...

What if they’re wrong?

What are the assumptions – do they change over time?

Etc.
Applies to ideas as well

Corner cases (thanks, Zvon):

- What about copy-pasting related work paragraphs (or background section) that you wrote for one paper into a newer paper of yours on a similar topic?

- Writing a PhD thesis often involves putting together several papers, i.e., published papers become chapters of your thesis. In the process, often lots of text from the original papers gets copy-pasted into a thesis. Papers are often coauthored by multiple people. What if not every single sentence that you copy-pasted into your thesis was written by you?

- What about paraphrasing paragraphs from someone else's paper?
Open and ongoing discussions about proper research practices are crucial

https://commons.wikimedia.org/wiki/Maps_of_the_world

Cultural Differences w.r.t. what constitutes plagiarism
Questionable Research Practices
The ideal scientific method is squeaky clean and has no complications:

“The scientific method relies on a hypothesis-driven experiment. Data are collected, then analyzed and interpreted. The results are communicated to others, who can assess the methods, the data, and the conclusions. A sufficient number of confirmed hypotheses build to support a theory.” (CITI training)
“In the real world, it is rarely this clean and linear.” (CITI training)
A little humor to start off (slightly tongue in cheek, but funny because there’s a grain of truth – “perfection is the enemy of progress”; different areas have different standards for what is common practice and what is misconduct)
<table>
<thead>
<tr>
<th>When Researchers Say...</th>
<th>What It Means...</th>
</tr>
</thead>
<tbody>
<tr>
<td>“It has long been known”</td>
<td>I didn’t look up the original reference.</td>
</tr>
<tr>
<td>“Typical results are shown”</td>
<td>This is the prettiest graph.</td>
</tr>
<tr>
<td>“In case after case”</td>
<td>Twice.</td>
</tr>
<tr>
<td>“In a series of cases”</td>
<td>Thrice.</td>
</tr>
<tr>
<td>“It is believed that”</td>
<td>I think.</td>
</tr>
<tr>
<td>“It is generally believed that”</td>
<td>A couple of others think so, too.</td>
</tr>
<tr>
<td>“It might be argued that”</td>
<td>I have such a good answer for this objection that I want to be sure I get to use it.</td>
</tr>
</tbody>
</table>

Attribution: Various
AUTHORSHIP
Authorship: Privilege and Responsibility

“significant intellectual contribution”

http://academia.stackexchange.com/questions/2467/what-does-first-authorship-really-mean
Authorship: Privilege and Responsibility

“significant intellectual contribution”

http://academia.stackexchange.com/questions/2467/what-does-first-authorship-really-mean
Whether it benefits you, them, or both...
The length you need to describe:

a) A new contribution

b) In depth

May be in-progress (e.g., at a workshop), followed by a later, more finalized conference paper
Simultaneous submissions

Archival vs. non-archival

Questions that arose:
arXiv – address explicitly? (May also be necessary to explain the role of tech reports / white papers)
Authorship

Honorary or gift authorship
Least Publishable Units
Duplicate publications

Joke or N/A authors

http://academia.stackexchange.com/questions/2467/what-does-first-authorship-really-mean

(CITI RCR used to have deceased [not sure what the policy is, actually], pets, make-believe)
Algorithm discovery by protein folding game players

Firas Khabib, Seth Cooper, Michael D. Tyka, KeFan Xu, Ilya Makedonski, Zoran Popović, David Baker, and Foldit Players

Department of Biochemistry, Department of Computer Science and Engineering, and Howard Hughes Medical Institute, University of Washington, Box 357365, Seattle, WA 98195
Contributed by David Baker, October 5, 2011 (received for review June 20, 2011)

Foldit is a multiplayer online game in which players collaborate and compete to assemble accurate protein structures. For specific hard problems, Foldit player solutions can in some cases outperform state-of-the-art computational methods. However, very little is known about how collaborative-gameplay protocols influence results and whether Foldit player strategies can be formalized and structured so that they can be used by computers. To determine whether high-performing players' strategies could be collected, collated, and augmented, the Foldit gameplay mechanics with tasks for players to encode their folding strategies as "recipes" and to share their recipes with other players, who are able to further modify and customize them. Here we describe the rapid social evolution of a protein folding game that was initiated one year following the introduction of these strategies. Players developed more than 2,000 different recipes, built by creating new algorithms and modifying and recombining successful recipes developed by other players. The foldit player platform supports a fully automated recipe-making system.

The data show that recipes learned through online development can be automated and published achievements in the Foldit community.

As the players themselves understand their strategies better than anyone, we decided to allow them to study their algorithms directly, rather than attempting to systematically learn approaches. We augmented the Foldit game with the ability to create, edit, share, and reuse gameplay recipes, referred to as "recipes" within the Foldit game (15). In the game, each player has their own "cookbook" of such recipes, from which they can evoke a variety of interactive automated strategies. Players can share recipes they create with the rest of the Foldit community or choose to keep their creations to themselves.

In this paper we describe the quite unexpected evolution of recipes in the past year after they were introduced, and the striking outgrowth and reuse of ideas that has occurred without any institutional intervention on an algorithm very similar to an artificial neural algorithm recently developed independently by scientists who have trained over previous methods.

Citation science is an approach to leveraging natural human capacities for scientific purposes. Most such efforts involve visual tools such as tagging images or locating image features (1). In contrast, Foldit is a multiplayer online scientific discovery game, in which players compete to assemble accurate protein structure models through interactive gameplay (2–4). It then recruits online gamers to optimize the computed Rosetta energy using both local and global problem-solving skills. Players manipulate protein structures with a palette of interactive tools and manipulate being trained in local regions, by adding to their protocols to style the cartoon chain different directions (11). The second category uses the implicit twist, which permits fragment insertion. This approach to solving problems will show, that in large regions of conformation space, these recipes are often run for long periods of time as they are designed to rebuild entire regions of a protein rather than just relinking them (Fig. 5). The third class of recipes performs local optimizations along the protein backbone in order to improve the Rosetta energy for every segment of the protein. The final category of recipes applies constraints between beta strands or pairs of alpha helices (17–19), as the secondary structure assignment to guide subsequent optimization.

Question: OK or not?
Author Order

The first author
Senior grad student on
the project. Made the
figures.

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 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 pro-
fessor or post-doc who
instigated the paper.

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 got the funding, and his
famous name will get the
paper accepted.

DATA
Data Acquisition, Analysis, and Reporting

- 
- 
- 
- 
-
Which data should be collected?
By what means should data be collected in order to ensure reliability and validity?
How much data should be collected - that is, how many subjects or events are required for adequate statistical power?

(Discussing and deciding on these things ahead of time helps combat “hey there’s a deadline this is good enough”
Which collection methods will be used and how will those methods reduce the likelihood of error or bias?
Who will supervise the work and how will the quality and integrity of the study be ensured?
%s/collect/analyze/
%s/collect/document/
%s/collect/report/
In other disciplines, there’s a longer history....(e.g., pen-only, date and initial pages and have others initial them as checks)
Errors and failures to document with deadlines, etc...

One possible approach: Try to automate everything, including records of, e.g., recording parameters that went into simulation runs, so you’re not stuck wondering what exactly happened later...
Growing dissatisfaction with papers that don’t share code or data.

Example: figure comes from paper that attempts to recompile and run code from papers at a particular set of conferences during particular years. Results uninspiring. (Not everyone agrees with the methodology of this particular tech report, but the point stands)

Some conferences now require (or give preference) to this kind of evidence

Question that came up: How do you convince others (e.g., advisor) of the value of continuing to support research software?

Zvon’s additions:

- What about publishing source code and input data used in experiments? What if the results were obtained during an internship and the company does not allow data (or even source code) to be published?

- How to ensure that experiments are reproducible? To how much trouble should we go through to have reproducible experiments?
CONFLICT OF INTEREST
Conference Reviews & Col

- NSF Guidelines:
  - family, advisor, advisees, recent collaborators, recent or potential institutions, financial

http://matt.might.net/articles/how-to-peer-review/
Conference Reviews & Col

• NSF Guidelines:
  – family, advisor, advisees, recent collaborators, recent or potential institutions, financial

What else?

http://matt.might.net/articles/how-to-peer-review/

Question: What else should we worry about w.r.t. Col?
From Matt Might:

“If you're a "close personal friend" of an author, decline review.

There's debate about the what "close" means, so ask yourself the following:

Would you review the paper impartially?
If the answer is no, she is too close.

And, the meaning of close can fluctuate over time.

Is she nearing tenure? Is he about to go on the academic job market?

In such cases, you might be more tempted to "help."

http://matt.might.net/articles/how-to-peer-review/
From Matt Might:

“It is equally important to recuse yourself if you have strong personal objections to an individual or work.

Even if you think you can review the manuscript fairly, decline to review, since a negative recommendation would be seen as tainted.”
From Matt Might:

“Every so often, you'll receive a manuscript to review in which you discover that someone else has independently solved the same problem as you.

These manuscripts cause heartburn.

I recommend informing the program chair or editor and recusing yourself from discussion of such manuscripts, since it is unlikely that you will be able to review it without some emotion.

If the paper is accepted but your work provides a better solution, you may be able to publish it.

If the paper is rejected, you may still want to walk away from publishing your work, since there could be accusations that you benefited from seeing their work.

If you decide to pursue publication, you can approach the authors directly or through the program chair or editor.

Explain that you recused yourself from discussion once you recognized they had
From Matt Might:

“There is a perception among some graduate students that if a venue will accept \( N \) papers, then giving a favorable review to a competing submission reduces that to \( N-1 \).

This is simply not true.

Papers are judged on the standards of the venue, and this tends to yield a similar rate of acceptances every year.

If you feel you can't review a manuscript objectively because you have a competing submission to the same venue, then decline to review.

Don't think that tanking a competing submission will improve your odds.

It will not.

And, if anyone suspects your review was tainted by a perceived pigeon-hole conflict, it could do measurable harm to your reputation.”
Review Procedures

Open

http://think-analyze-beyou.deviantart.com/art/lady-justice-475450349
Review Procedures

Open

Single-blind

http://think-analyze-beyou.deviantart.com/art/lady-justice-475450349
• PC rules & stepping out of room

• Reporting conflicts pro-actively (even if conference doesn’t have a system for it)

• De-anonymizing self as a reviewer generally viewed as OK – everything else is problematic
Reviews tl;dr

Confidentiality
Reliability
Professionalism
Reviews tl;dr

Confidentiality
Reliability
Professionalism

Seriously, that’s not an uncommonly used conference review system
Bias or the _appearance_ of bias
When in doubt, ask/disclose
HUMAN SUBJECTS RESEARCH

Let’s talk about principles behind ethical HSR
...a common component being informed consent

Consider:
• Clear explanations
• Explanation of alternatives
• etc
Beneficence

Do No Harm

Maximize Benefits

Or, if harm is necessary, maximize benefits...
Make sure that, for example, the harms and the benefits correspond to the same population and that you don’t, for example, experiment (detrimentally) on prisoners because they’re convenient when the benefits are for everyone.
There are procedures in place which are required for all research performed with federal money (e.g., NSF) and usually apply to all the research of an institution that receives federal funding.

Utah’s IRB website
If it even vaguely smells like people or their data....
Go ahead and submit for an exemption – it is the review board’s job to make that decision, not yours

Some conferences that don’t traditionally deal with humans have started to require statements about IRB approval in manuscripts
Obtaining IRB approval does not absolve you of considering the broader ethics

IRB-Approved ≠ Ethical
Conference PCs still figuring out how to handle this...reject? Accept with notice?
Conference PCs still figuring out how to handle this...reject? Accept with notice?
There are increasingly other (voluntary) resources to undergo ethics checks (varies by discipline) – e.g., screenshot
Let’s talk about gray areas in research
A/B testing in industry regarding products and product performance is common.

There isn’t necessarily any ethical oversight in companies

Emotional Contagion study received a lot of media attention recently

Basically, Facebook experimented with what was displayed in newsfeeds. Some newsfeeds showed > more emotionally positive posts (by some NLP definition) and some newsfeeds showed > negative posts. Effect was measured in terms of whether resulting posts were more emotionally positive or negative (respectively). Surprise: they were

Objections: e.g., emotionally vulnerable individuals

Other objections: IRB seems to have been vaguely bypassed; seems like academic researchers talked with Facebook, which instrumented to collect dataset, then IRB submission at academic institution was for “pre-existing data”

Question: reactions?

But!
A / B Testing in Industry

Self-Censorship

http://www.forbes.com/sites/kashmirhill/2014/07/10/facebook-experiments-on-users/

From Forbes:

“How they did it: They tracked every entry of more than 5 characters in a comment or compose box that didn’t get posted within 10 minutes.

What Facebook found out: We’re thinking things that we don’t put down to digital paper. 71% of the users “self-censored,” drafting comments that they never posted.”

Question: reactions?
From Forbes:

“Users had the active or “passive” sharing randomly assigned to them, changing their experience (and their spammed friends’ experience) of the site. When given the option to share, only 23% chose to do so”

Question: reactions?
From Forbes:

“Researchers “randomly” assigned 75 million urls a “share” or “no-share” status...”“Directed shares, such as a link that is included in a private Facebook message or explicitly posted on a friend’s wall, are not affected by the assignment procedure,” wrote the researchers.”

Question: reactions?
From Forbes:

“When it happened: 2010 midterm elections in the U.S.

How many users: 61,279,316 users over the age of 18

How they did it: They offered test subjects an ‘I Voted’ button at the top of their News Feeds and information on how to find their polling place. Some users also saw the names of their friends who had clicked the button. The control group got no prompt to vote. Then the researchers checked public voting records to see which of the millions actually voted.”

Question: reactions?
From Wikipedia:

“The Carna botnet was a botnet of 420,000 devices created by an anonymous hacker to measure the extent of the Internet in what the creator called the “Internet Census of 2012”.

The data was collected by infiltrating Internet devices, especially routers, that used a default password or no password at all.

World map of 24-hour relative average utilization of IPv4 addresses observed using ICMP ping requests by Carna botnet, June - October 2012”

Question:
- OK or not?
- OK to use resultant dataset or not?
e.g., do you pay them minimal wage? Minimal mage according to where?

Question that came up: What are Amazon’s current recommendations w.r.t. this?
Interesting as a broad topic. More specifically, let’s talk about videos.

Some venues require short summary videos. Other researchers produce them (or FAQs, or press releases) optionally.

From hizook.com:

“The video needs to stand alone.

"It's mentioned in the audio." Not everyone listens to the audio.
"You can read the paper for details." Non-academics don't read papers -- full stop.
"It's in the YouTube title or description." The videos on this page are embedded. It's too easy to miss.
"This video is only for other researchers." Too bad, the general public will consume it too.”
From hizook.com:

“...But what you may have missed... the inconspicuous infrared cameras that form the backbone of a "20-camera Vicon motion capture system" that costs between $20k and $50k”

Audio+visual? Watermarked video?

Question that came up: Are we really responsible for people’s ignorance?
Clarify teleoperated vs. scripted vs. autonomous:

Video is Teleoperated and sped up
Research and PR

Cloth Grasp Point Detection based on Multiple-View Geometric Cues with Application to Robotic Towel Folding

Jeremy Maitin-Shepard
Marco Cusumano-Towner
Jinna Lei
Pieter Abbeel

Department of Electrical Engineering and Computer Science
University of California, Berkeley

International Conference on Robotics and Automation, 2010

http://www.hizook.com/blog/2012/07/02/being-honest-robot-videos-motion-capture-speedup-rates-and-teleoperation

Video is 50x realtime
Tethered vs. wireless, battery-powered
Questions? Other Issues?

What research are you even choosing to conduct? Are there embedded implicit values (e.g., net neutrality is positive)?

If you’re making tools, what things do those tools make easy? What things don’t they support? What are the implications?