Ethics in Research

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Ph.D. Scholars

As doctoral students, you have three important roles:

- Student
  - When attending courses yourself
- Teacher
  - When serving as teaching assistant or course instructor
- Researcher
  - When performing research under the guidance of a professor

Academic Integrity, a Fundamental University Value*

"The academic degrees and the research findings produced by our Department are worth no more than the integrity of the process by which they are gained.

If we do not maintain reliably high standards of ethics and integrity in our work and our relationships, we have nothing of value to offer one another or to offer the larger community outside this Department, whether potential employers or fellow scholars."

** CSE Graduate Handbook*

Examples of Academic Dishonesty*

- Plagiarism (coursework as well as research)
- Cheating (unauthorized collaboration)
- Falsifying Academic Materials
- Misrepresentation of Documents
- Submitting Previously Submitted Work
- Purchasing Academic Assignments
- Selling Academic Assignments
- Violating Confidentiality of Academic Materials

* https://grad.buffalo.edu/succeed/current-students/policy-library.html#academic-integrity

Advice for Students

- Preparation is the key to success:

  - Attend all classes. Take good notes.
  - Start promptly on homeworks and projects; helps avert last-minute crisis.
  - Avoid unauthorized collaboration; instead seek help directly from the TAs and instructor.

- Maintaining academic integrity in your work builds confidence in yourself, earns the respect of faculty and peers, and enables you to grow in stature in your field.

Ethics for Teachers and Teaching Assistants

Teachers/TAs are held to a higher ethical standard because they are entrusted with educating students.

- Treat students with respect and politeness
- Be impartial – no favorites or prejudice
- Don’t give/take gifts, unless it is of a trivial nature
- Maintain confidentiality of student information
- Use university resources for academic purposes only
- Be punctual to class; make alternate arrangements if you need to miss class.

Research – Brief Definition

- Systematic Study or Inquiry
- Leading to new knowledge or theory, or creation of a new artifact, process, etc.
- Goal of research is to advance a field, be it science, engineering, or the arts.

Doctoral Research

- Take advanced courses and build technical skills
- Identify research advisor and meet regularly
- Study important papers from conferences and journals
- Identify open problems that you can investigate
- Attend and present at research group meetings
- Write papers and submit to conferences/journals
- Attend conferences and workshops

Qualities of a Good Researcher

- Logical Thinking and Ability to Abstract
- Attentive to Details
- Well-informed, has broad background
- Creative and Innovative
- Communicates Well
- Passionate about the Subject
- Perseverance, take success/failure in stride
- Maintains high standards of ethics

Research Ethics

Some of the later slides are adapted from material from:

Prof. Lee Brown,
http://faculty.fullerton.edu/leebrown/,
for his course on Research Methods.

Additional material taken from
"Politics of Research"
and
"Research Ethics – Summary".

- Many of the modern day guidelines for ethical research originated from human subjects' abuses in the 1800's and 1900's:
  - Nazi experiments using war chemicals, environmental extremes, food and sleep deprivation, etc
  - Tuskegee Alabama study where men with syphilis were "treated" with a placebo instead of a drug
- US Congress formed the National Commission for the Protection of Human Subjects in Biomedical and Behavioral Research (1974)

http://en.wikipedia.org/wiki/Unethical_human_experimentation_in_the_United_States

Institutional Review Board (IRB)

- In the US, the IRB is a panel of research experts that pass judgment on the quality and safety of studies before they can be conducted.
- Primarily responsible for protecting the rights of subjects – health, safety, privacy – but also the researchers and the institution.
- Provides potential subjects with information to make a good decision about participating in a study.
- Provides simple but comprehensive information about the study.

Scientific Dishonesty in Research

- Plagiarism
- Fabrication and falsification
- Non-publication of data
- Faulty data-gathering procedures
- Poor data storage and retention
- Misleading authorship
- Sneaky publication practices

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Don’t Plagiarize – Cite References

- Internet has made it easy to cut and paste.
- Plagiarism = putting your name on the ideas, writings, drawings, and codes of others.
- Plagiarism is not just copying verbatim, but also taking ideas without attribution.
- Any copied passage must be given in quotes.
- Definitions, theorems, etc., from other sources can be taken with attribution, such as:

  “*The following definitions are taken from Smith and Jones [25]: …*”

  and then reproduce their definitions verbatim.

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Why do people fabricate and falsify in their research ?

- Pressure on the job.
- Need to complete research study and get a job.
- Need to increase one's publication count.
- Need to obtain external funding.
- Obtain rewards in the field and become famous
  - "The Fugitive" starring Harrison Ford, Tommy Lee Jones
  - In this movie, a "reputable" scientist hides the fact that a certain drug that he invented causes liver damage in order to profit from stake in a billion-dollar pharmaceutical company.

Right Attitude Towards Research

- Develop a genuine liking for your work. This comes with reading, discussion, conferences.
- Strive for excellence.
- Be honest with yourself.
- Don’t ignore small issues – they can lead to bigger openings in your research.
- Take critical reviews in stride – they help you improve your research.

Maximizing Publications – Unethically!

- Salami-Slicing: breaking up work into large number of small papers, often called "minimal publishable units"
- Tiling: publishing a sequence of substantially overlapping papers.
- Double Publishing: publishing the same work twice
- Parallel Submissions: send same paper to simultaneously to two journals or conferences

Peer Review Process

- Prior to acceptance, conference and journal papers are rigorously reviewed by fellow researchers – none of whom are paid for their service.
- Peer review is also used for proposal evaluation, tenure evaluation, etc.
- The importance of being an ethical reviewer.

Today, double-blind reviewing of papers has become common, to protect anonymity of authors as well.

ACM and IEEE Codes of Ethics and Professional Conduct

Please read:

https://www.acm.org/code-of-ethics

https://www.ieee.org/about/corporate/governance/p7-8.html

ACM Code of Ethics

1.1 Contribute to society and human well-being.
1.2 Avoid harm to others.
1.3 Be honest and trustworthy.
1.4 Be fair and take action not to discriminate.
1.5 Honor property rights including copyrights and patent.
1.6 Give proper credit for intellectual property.
1.7 Respect the privacy of others.
1.8 Honor confidentiality.

Sections 2 and 3 deal with professional responsibility and imperatives for organizational leaders.

IEEE Code: Ethics & Professional Conduct

1. to hold paramount the safety, health, and welfare of the public, to strive to comply with ethical design and sustainable development practices, and to disclose promptly factors that might endanger the public or the environment;
2. to avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist;
3. to be honest and realistic in stating claims or estimates based on available data;
4. to reject bribery in all its forms;
5. to improve the understanding by individuals and society of the capabilities and societal implications of conventional and emerging technologies, including intelligent systems;
6. to maintain and improve our technical competence and to undertake technological tasks for others only if qualified by training or experience, or after full disclosure of pertinent limitations;
7. to seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, and to credit properly the contributions of others;
8. to treat fairly all persons and to not engage in acts of discrimination based on race, religion, gender, disability, age, national origin, sexual orientation, gender identity, or gender expression;
9. to avoid injuring others, their property, reputation, or employment by false or malicious action;
10. to assist colleagues and co-workers in their professional development and to support them in following this code of ethics.

Taken from the website mentioned on previous slide.

Story of the Black Belt

(from karate folklore)

After years of hard work, the student appears before his master who asks one final question:

"What is the true meaning of the black belt?“

"The end of my journey," says the student. "A well-deserved reward for all my hard work."

“You are not ready for the black belt,” says the master, “return after one year!”

Story of the Black Belt (cont'd)

After another year of hard work, the student appears before his master who again asks:

"What is the true meaning of the black belt?“

"A symbol of distinction,” says the student, “the highest achievement in our art."

“You are not ready for the black belt,” says the master, “return after one year!”

Story of the Black Belt (cont'd)

After another year of hard work, the student appears before his master who again asks the same question. Now the student replies:

"The black belt is just the start of a never-ending journey of discipline, hard work, and the pursuit of an ever-higher standard."

"You are now ready for the black belt," says the master, "go and get started on your work!"