CENG590 Research Methods and Ethics
Fall 2018

Instructor: Prof. Dr. Sibel Tari (Room: A-403) stari@metu.edu.tr
Schedule: Thu 13:40-16:30 Thu
Credits: METU Credit 3 ECTS Credit 8.0
Grading: Catalog rules

Rules and Regulations

- Reports should be prepared using word processing.
- The communication platform is *odtuclass.* Students should follow *odtuclass* regularly for announcements and posted material, and communicate their needs either via the above given e-mail address or *odtuclass.*
- E-mail communication with the instructor is only via address stari@metu.edu.tr

External Links

Professional and Scholarly Forums

ACM Committee on Professional Ethics: https://ethics.acm.org/code-of-ethics
Open Software Initiative: https://opensource.org/
Creative Commons: https://creativecommons.org/
Yüksek Öğretim Kurumları Bilimsel Araştırma ve Yayın Etiği Yönergesi:
http://www.yok.gov.tr/web/guest/icerik/-/journal_content/56_INSTANCE_rEHF8BIsfYRx/10279/18187

Scholarly Journals and Conferences

Ethics and Information Technology journal: https://link.springer.com/journal/10676
Behaviour and Information Technology journal: http://www.tandfonline.com/toc/tbit20/current
ACM SIGMIS CPR Conference: http://dl.acm.org/event.cfm?id=RE173

International Organizations

World Economic Forum https://www.weforum.org/
ALLEA – All European Academies http://www.allea.org/
Council of European Professional Informatics Societies: https://www.cepis.org/
e-Competence Quality: http://www.e-competence-quality.com/ http://www.ecompetences.eu/
WIPO (World Intellectual Property Organization) http://www.wipo.int/portal/en/index.html
Computing Research Association: https://cra.org/

Outline

Part I Pillars of the Scientific Method

Science Has Only Two Legs (M. Vardi)
Communications of the ACM, September 2010, Vol. 53 No. 9, Page 5
10.1145/1810891.1810892
https://cacm.acm.org/magazines/2010/9/98038-science-has-only-two-legs/fulltext

What Kind of Science Is Computational Science? (R. Allain)
Wired Science Blog Entry
https://www.wired.com/2014/01/what-kind-of-science-is-computational-science/

What Kind of Science Is Computational Science? A Rebuttal (T. Kolda)
SIAM News
https://sinews.siam.org/Details-Page/what-kind-of-science-is-computational-science-a-rebuttal

Assignment 1 (25%)
Students are expected to form an opinion, write an essay and participate to discussions. Essay due on Oct 21 Sunday, class discussion on Oct 25 Thursday (submit via pdf to odtuclass or in case of technical problems to stari@metu.edu.tr)

Part II Reproducible Research

Communicating results – levels of detail
Caching internal calculations
Disclosure practices

Shining Light into Black Boxes (A. Morin et al)
https://salilab.org/pdf/Morin_Science_2012.pdf

Post-publication sharing of data and tools (P. Schofield et al)
https://www.nature.com/articles/461171a.pdf

"Setting the Default to Reproducible" in Computational Science Research (V. Stodden et al)
https://sinews.siam.org/Details-Page/setting-the-default-to-reproducible-in-computational-science-research

Assignment 2a (20%)
Students are expected to evaluate a paper from a high-profile venue in computer science and engineering in terms of reproducibility and present their evaluation.

Assignment 2b (20%)
Co-lead a class discussion

Dates: Nov 8, Nov 15 and Nov 22

Part III Technical Writing

How to write a good computer science/engineering paper
Sentence connectors
Level of detail
Transferring papers as parts of thesis content
Transferring thesis content to papers

Part IV Assessment - Quantifiable Measures

Testing hypothesis
Data dredging, biases, and confounding
Performance metrics

Free discussions (5%)
Participation to free class discussion

http://kilyos.ee.bilkent.edu.tr/~haldun/publications/ozaktas202.pdf

Part V Selected Legal/Ethical Issues

Authorship
Collaboration
Who pays for scientific research?
Open Access
Intellectual Property
Plagiarism

Assignment 3 (50%; 35-5-5-5)
Student groups led discussions on the above listed topics. Pay attention to the split of 50%; it involves participation and peer evaluation (as referee and as refereed).

Students who attend each presentation session in Part II receive 1 bonus point
Part V requires participation to discussions led by other groups as well