

# Academic conduct: truth in reporting and conflict of interest

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# Sections

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1. Honest Data
2. Conflict of Interest
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4. Allocation of credit
5. Data Privacy
6. Handling Misconduct

# Honest Data

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- Statistical significance
- Abusing statistical analyses
- Data Publication and Reporting
- Data Ownership

# Statistical significance

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When the probability of a result occurring from measurement errors is higher than some predetermined threshold it is considered *statistically significant*.

P-value : Assuming that the null hypothesis is correct what is the probability of getting the values observed.

Example : CERN requires a p-value of five-sigma or probability, of  $3 \times 10^{-7}$ . Taking the Higgs boson discovery as an example, “This is not the probability that the Higgs boson does or doesn't exist; rather, it is the probability that if the particle does not exist, the data that CERN scientists collected in Geneva, Switzerland, would be at least as extreme as what they observed” -- Evelyn Lamb

# Abusing statistical analyses

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- P-hacking : Performing many statistical tests on the data and only reporting those that come back with significant results.
  - You find out that above average chocolate consumption and breast cancer are highly correlated because you tested that hypothesis on chocolate and peanuts and tomatoes...
- Cherry picking: Choosing specific data points/functions/metrics
- **HARKing : Hypothesizing After the Results are Known.**
  - You analyze a data set and find out that there are more green frogs than black frogs and then you mention in the paper a hypothesis that says: being more poisonous, green frogs are more likely to survive than black frogs. As if the hypothesis predicted this.

# Data publication and reporting

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There are often factors in research settings that can result in compromises to data integrity. These factors may facilitate conditions where the goal of conducting research in as objective a manner as possible can sometimes be challenged. These can be categorized as either external or internal factors as follows:

## External Factors:

- Publication pressure
- Professional competition
- Job security
- Lack of formal mentoring
- Unclear guidelines
- Lack of penalties
- Little chance of getting caught

## Internal Factors:

- Individual ego or vanity
- Personal financial gain
- Psychiatric illness (Weed, 1998)
- Incompetence
- Sloppy writing/reporting

# Data publication and reporting

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Schön scandal Schön's field of research was condensed matter physics and nanotechnology. He worked in Bell Labs, NJ on replacing conventional semiconducting elements with crystalline organic materials. In 2001 he was listed as an author on an average of one newly published research paper every eight days. Some of Schön's experiments contained the same noise. More research showed further data duplication. In May 2002 Bell Labs started an investigation. On September 25, 2002, the committee publicly released its report. The report contained details of 24 allegations of misconduct.

# Data ownership

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Data ownership is the act of having legal rights and complete control over a single piece or set of data elements. It defines and provides information about the rightful owner of data assets and the acquisition, use and distribution policy implemented by the data owner.

Research results can be directly affected by the policies enforced by companies for example. When you're a researcher for Google, they dictate what you're allowed to share which might make the reproducibility of the paper more difficult if not impossible in some cases.



# Conflicts of Interest

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- Take steps to avoid conflicts on interest
  - Don't review a paper written by a close friend
- Take steps to avoid the *appearance* of conflicts of interest
  - Don't review a paper for someone in your department even if you don't know them
- Disclose (in writing) any facts which are or appear to be conflicts
  - At the end of your paper, disclose your source of funding
- Reach out for guidelines
  - Many organizations have set standards; reach out so you know if your case applies.
- Talk to someone outside the situation
  - Contact the paper's publisher and tell them the situation.

# Conflict of Interest Policy for ACM Publications

*Updated and Approved by the ACM Publications Board, June 19, 2019*

## **Executive Summary**

This policy outlines a Conflict of Interest (COI) policy for ACM Publications. It describes what a COI is, who is responsible for being aware of such conflicts, how to manage COIs, and how to report violations.

Conflicts of Interest in publication are to be avoided because they raise questions about the quality, impartiality, and accuracy of published items, even when the parties involved believe they have been fair and impartial. Sometimes, a conflict will lead to an unconscious bias that can influence decisions, even if the parties involved believed they are objective. Thus, a credible COI policy cannot rely solely on individuals to make their own COI self-determinations.

<https://www.acm.org/publications/policies/conflict-of-interest>

# Conflicts

- Money always
- Papers should
- Example: the

<b>Start Date:</b>	July 1, 2014
<b>End Date:</b>	June 30, 2019 (Estimated)
<b>Awarded Amount to Date:</b>	\$499,691.00
<b>Investigator(s):</b>	Leonid Reyzin reyzin@bu.edu (Principal Investigator)
<b>Sponsor:</b>	Trustees of Boston University 881 COMMONWEALTH AVE BOSTON, MA 02215-1300 (617)353-4365
<b>NSF Program(s):</b>	Secure & Trustworthy Cyberspace
<b>Program Reference Code(s):</b>	7433, 7434, 7923, 8251
<b>Program Element Code(s):</b>	8060

## ABSTRACT

In order to establish a secure communication channel, each communicating party needs some method to authenticate the other, lest it unwittingly establish a channel with the adversary instead. Current techniques for authentication often rely on passwords and/or the public-key infrastructure (PKI). Both of these methods have considerable drawbacks since passwords are frequently breached, and PKI relies on central authorities which have proven to be less than reliable. Thus there is a need to use other sources of information for the communicating parties to authenticate each other. Such information should be at least partially unavailable to the adversary since the adversary can pretend to be one of the parties. Many natural sources of such information such as visual passwords or physical tokens are noisy, and don't give the same result each time they are accessed.

This project investigates new techniques for using realistic noisy sources in authentication, without necessarily reconciling the values. It combines ideas from a variety of related lines of research, including information reconciliation, secure computation, password-based key agreement, program obfuscation, and locality-sensitive hashing. If successful, it will lead to better authentication solutions than are currently deployed. The investigators have contributed to standardization work in professional organizations like IEEE and IETF, and have collaborated with industry.

gements).

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# Plagiarism

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- Word-for-word:

“It is not hard to see the importance of the Second Treatise of Government to our own democracy. Without it we would miss some of the most familiar features of our own government. It is safe to assert that the much criticized branch known as the Supreme Court obtained its being as a result of Locke’s insistence upon the separation of powers; and that the combination of many powers in the hands of the executive is contrary to the principles enunciated therein; the effect of which is not spent, though the relationship may not be consciously traced. The framers of our own Declaration of Independence and the statesman who drew up the Constitution have re-echoed its claims for human liberty, for the separation of powers, for the sanctity of private property. All these are marks of influence of Locke’s Second Treatise on our own way of life.”

Example from <https://www.bu.edu/academics/policies/academic-conduct-code/>

# Plagiarism

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- Mosaic

“The crystallizing force of Locke’s writing may be seen in the effect his Second Treatise of Government had in shaping some of the familiar features of our own government. That much criticized branch known as the Supreme Court and the combination of many powers in the hands of the executive under the New Deal are modern examples. But even the foundation of our state—the Declaration of Independence and the Constitution—have re-echoed its claims for human liberty, for the separation of powers, for the sanctity of private property. True, the influence of others is also marked in our Constitution—from the trend and aim of writers like Languet and Bodin, Hooker and Grotius to say nothing of Aristotle and the Stoic school of natural law; but the fundamental influence is Locke’s Treatise, the very quarry of liberal doctrines.”

Example from <https://www.bu.edu/academics/policies/academic-conduct-code/>

# Plagiarism

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- Paraphrase

“Many fundamental aspects of our own government are apparent in the Second Treatise of Government. One can safely say that the oft-censured Supreme Court really owes its existence to the Lockean demand that powers in government be kept separate; equally one can say that the allocation of varied and widespread authority to the President during the era of the New Deal has still to encounter opposition because it is contrary to the principles enunciated therein... Once more it is possible to note the way in which Locke’s writing clarified existing opinion.”

Example from <https://www.bu.edu/academics/policies/academic-conduct-code/>

# Plagiarism

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- The “Apt” Text

“The Second Treatise of Government is a veritable **quarry of liberal doctrines**. In it the **crystallizing force of Locke’s writing** is markedly apparent. The cause of human liberty, the principle of separation of powers, and the inviolability of private property—all three major dogmas of American constitutionalism—owe their presence in our Constitution in large part to the remarkable Treatise which first appeared around 1685 and was destined to spark within three years a revolution in the land of its author’s birth and, ninety years later, another revolution against that land.”

Example from <https://www.bu.edu/academics/policies/academic-conduct-code/>

# Plagiarism

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- Self-plagiarism
  - Plagiarism of citations
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- All of this can be avoided by just citing your sources!



# Allocation of credit

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A co-author should have made direct and substantial contributions to the work (but not necessarily the paper). Contributions may be:

- Key ideas
- Implementation
- Experiments / collection of data
- Data analysis
- Writing the paper

If someone made a contribution that is useful to the paper but is not good enough to be a co-author they have to be mentioned somewhere in the paper (it costs nothing to add them)

# Data Privacy

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- Privacy and confidentiality
  - Why are they important?
- Benefits of maintaining confidentiality
  - Research participant - researcher relationship
- Exceptions
  - Limited circumstances
  - Societal interests vs. keeping confidentiality

# Federal Regulations, Guidance & Protection

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- The Belmont's Report (1979)
  - Respect for persons
  - Beneficence
  - Justice
- Code of Federal Regulations: *The Common Rule*
- HIPAA privacy rule
- State-level protection
- IRB's role in protecting privacy
- Informed Consent

# Data Protection

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- Data protection plan
- Contingency plan to deal with any breach of confidentiality
- Presenting data
  - Encrypted
  - De-linked or anonymized
  - Anonymous
- Choosing appropriate settings
- Privacy measures should be particular to every research subject

# Special Considerations

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- Mandatory reporting
- Sensitive data
- Certificates of Confidentiality (CoC)
- Third-party research
- Secondary or incidental findings
- Informing participants of confidentiality protections and limitations
- Waivers of documentation of informed consent

# Handling Misconduct

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- NIH Office of Research Integrity
  - Summary of misconduct cases, and penalties applied
- Responsibility to report misconduct
- Make allegations in good faith
- Cooperate with inquiries and investigations
- Remember:

**Confidentiality is key!**

# Bibliography

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