Guidelines for Scientific Research Graduate School of Information Science and Technology

March 2011
Revised: December 2014

All students of the Graduate School of Information Science and Technology should read and understand the following guidelines for scientific research before they start research, i.e., at the time they enter the graduate school. Research at the graduate school should be conducted in accordance with these guidelines. In particular, candidates should follow these guidelines when writing PhD and Masters' theses.

As "Code of Conduct of Research" and "Action Plan for Research Ethics" were enacted in December 2013 and March 2014, respectively, this guideline was revised.

Ethics in Scientific Research

Scientific research should also be conducted in accordance with both the laws and the mores of society. This applies to research in information science and technology in this graduate school.

The following kinds of research are regarded as "improper research," and prohibited:
- ◆ Research with dishonest acts
- ◆ Research against humans and society
- ◆ Unapproved research on humans and animals
- ◆ Research that breaks the law
- ◆ Research with conflicting interests

The following sections elaborate on dishonest acts in scientific research, unapproved research on humans and animals, and research with conflicting interests and ambiguity of scientific research.

Dishonest Acts in Scientific Research

You should not commit improper acts in the course of scientific research.

Improper acts in scientific research are classified as follows.
- ◆ Plagiarism (stealing sentences)
- ◆ Plagiarism (stealing ideas or data)
- ◆ Fabrication (creating non-existent data)
- ◆ Alteration (changing or modifying data), also called falsification

Improper acts are elaborated as follows.

Plagiarism (Stealing Sentences)

When you copy sentences written by other authors and use them in your document, you should clearly identify them in your document, e.g., by using quotation marks or indentation. You should not include the sentences of other authors without identifying them as quotations.

The following conditions should be satisfied in quotations.
- ◆ You should identify them explicitly, for example, by using quotation marks or indentation.
- ◆ You should add their references.
- ◆ You should not make any changes to the quoted sentences. This is related to moral rights in copyright law.
- ◆ There should be an appropriate reason to use the quote. You should not make quotation without a legitimate reason.
- ◆ Quoted sentences and your original work should be clearly distinguished. Quoted sentences should be

subordinate to your original work.
◆ Quotation should be restricted to a reasonable magnitude. You should not quote a whole paper from a journal.

The condition when an activity is considered as a quotation is precisely defined in the Copyright Law of Japan.

Figures should be handled in the same way as sentences. Add their references and do not make changes. Figures may not be regarded as proper quotations in some situations. You are advised to obtain permission before you publish your document.

The above notices also apply to sentences and figures from the web (e.g., Wikipedia).

Persons other than the authors of a document are all "other authors." For example, members of the lab, including your collaborators, are also "other authors."

Plagiarism (stealing sentences,) as explained above, is against both copyright regulations and research ethics.

Quoting Sentences: Examples

Donald E. Knuth writes (Computing Surveys, Vol. 6, No. 4, December 1974, p.264):

At the IFIP Congress in 1971 I had the pleasure of meeting Dr. Eiichi Goto of Japan, who cheerfully complained that he was always being eliminated. Here is the history of the subject, as far as I have been able to trace it.

The first programmer who systematically began to avoid all labels and **go to** statements was perhaps D. V. Schorre, then of UCLA. He has written the following account of his early experiences [85]:

Since the summer of 1960, I have been writing programs in outline form, using conventions of indentation to indicate the flow of control. I have never found it necessary to take exception to these conventions by using *go statements.* I used to keep these outlines as original documentation of a program, instead of using flow charts . . . Then I would code the program in assembly language from the outline. Everyone liked these outlines better than the flow charts I had drawn before, which were not very neat--my flow charts had been nick-named "balloon-o-grams."

He reported that this method made programs easier to plan, to modify and to check out.

The reference [85] is defined on p.301 as follows:

[85] SCHORRE, D. V. "Improved organization for procedural   languages," Tech. memo TM 3086/002/00, Systems   Development Corp., Santa Monica, Calif., September 8, 1966, 8 pp.

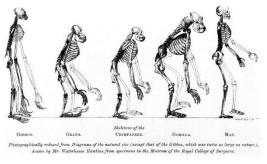## Quoting Pictures: Examples

Illustration:

Figure 1. Illustration of skeletons of apes and man by B.W. Hawkins, from T.H. Huxley's *Evidence as to Man's Place in Nature* (1863).

Photography:

Figure 2. Parts of the original Babbage's machine. Photography by Andrew Dunn (2004), reproduced here under the Creative Commons BY-SA license.

Self-plagiarism

The act of copying sentences you wrote in the past and reusing them in a new document is called "self-plagiarism." Self-plagiarism should also be avoided. It is only permitted in limited situations. In your PhD or Master's thesis, you are usually allowed to copy sentences you wrote in the past under the same research topic.

Publishing Video or Sound

The following is related to copyright.

Do not publish video or sound taken during courses or exercises. These acts are against copyright regulations concerning the right to refuse to be photographed.

Even if you get permission from the lecturer of a course, you should be careful to consider other persons who happen to appear on the screen, from whom you may also have to get permission. If pictures or sculptures happen to appear on the screen, you are likely to be sued by their creators.

Plagiarism (Stealing Ideas or Data)

When you refer to the ideas or data of other persons, you should mention who originated them. Do not write as if they are yours. This kind of plagiarism (stealing ideas or data) is not against copyright, but against researchers' ethics, and should never be committed.

Quoting Ideas or Data: Examples

Ideas:
- ◆ "As first observed by Alon et al. [AMS99], one can argue that…"
- ◆ "We give a proof of our main theorem, which is inspired by an argument from [AMS99]."
- ◆ "We introduce a parametrization of this phenomenon, following the work of [AMS99]."

where

[AMS99] N. Alon, Y. Matias and M. Szegedy. The Space Complexity of Approximating the Frequency Moments. *Journal of Computer and System Sciences* 58(1), pp. 137-147, 1999.

Data:
- ◆ "A success rate of 90% has been recently reported (Olmschenk et al., Science 323, 486, 2009),…"

Fabrication and Alteration (Falsification) of Data

Do not fabricate or alter data corresponding to results of experiments.

The Committee on Standards of Conduct in Scientific Research of the university prohibits not only;
- ◆ fabrication, alteration or plagiarism of data or research results of any kind

but also
- ◆ acts to hide the above-mentioned acts or obstruction of their proof (including destruction, abandonment and lack of experimental records that are indispensable for double-checking or reproduction).

Questionable Research Practices

In addition to refraining from research misconduct, the researchers must not engage in questionable practices.

Improper Authorship

Listing as authors those who have contributed little to a paper, or failing to list those who have made a significant contributions is inadequate.

Misrepresentation of Academic Achievements

Falsely representing academic achievements on research proposals or reports should not be done.

Duplicate Submission

Submitting reports of substantially the same work for publication in more than one conference or journal without following applicable regulations is prohibited. For rules about duplicate submission, you can, for example, refer to the following URL.

http://www.ieee.org/publications_standards/publications/rights/Section_822F.html

Unapproved Research on Humans and Animals

Research on humans or animals should be judged and approved by a committee of the graduate school or university.

Research related to plants or bacteria should also be judged and approved if specified by laws or other rules.

If you plan to engage in such research, consult your supervisor in advance.

Research with Conflicting Interests

Research carried out in collaboration with companies or other institutions should be conducted in accordance with the related guidelines of the university and the graduate school so that conflicts of interest between the university and an institution or between institutions are avoided.

Consult your supervisor before starting research collaboration.

Ambiguity of Scientific Research

As the Presidents of the University of Tokyo have repeatedly stated, you may not carry out research for military purposes whose results are secret to the public. Care should be taken in research collaboration, which might include such a research.

Scientific research tends to be ambiguous. The University of Tokyo expects individual researchers to act sensibly, deeply considering the ambiguity.

Keeping Records and Materials

Research findings are accepted as correct only after they are subjected to rigorous review and criticism by fellow researchers. To facilitate peer review and verification of results, researchers must keep clear and complete records of a study. Laboratory notebooks, data, and other materials produced during the study should be preserved after publication as well.

Dishonest Acts in Courses

Committing plagiarism in writing a report or thesis is a dishonest act for a student. It is equivalent to cheating on an examination and is against both the common rules of the university and students ethics.

Including others' sentences (including data and programs) in a report is treated as cheating on an examination. Credit for the course is duly cancelled. In the worst cases, these acts are discussed by the student disciplinary committee, and this may result in expulsion or suspension.

Committing plagiarism in a PhD or Master's thesis is not only against research ethics but is also against students' ethics, and will be discussed by the student disciplinary committee. This may result in expulsion or suspension.

For the Use of the School's Network

All computing facilities, networks, and affiliated equipment are for educational and research activities. To use them, you should consult the "University of Tokyo Rules Pertaining to Information Ethics" (http://www. cie.u-tokyo.ac.jp/RulesPertain.html).

Weakening the security level of the school's IT infrastructure is strictly prohibited. For example, disclosing wireless network access keys to third parties is treated as leaking the school's confidential information.

Downloading from illegal sites is explicitly prohibited by the Copyright Law of Japan, and infringement of this law will be discussed at the student disciplinary committee. This may result in expulsion or suspension. Viewing of A/V materials, in infringement of the rights of public transmission, is prohibited.

In the Graduate School of Information Science and Technology, use of P2P is prohibited except for the research purposes. The University of Tokyo regularly inspects the use of P2P.