Writing Lab 11

Physics 280

Course Schedule -- Major Date Reminders for Remaining Semester

RE4v2 -- assigned Mon 4/11, due Wed 4/13, returned Mon 4/25

RPv1 -- returned Mon 4/18

All Extra Credit -- due Mon 4/18

RPv2 -- assigned Mon 4/18, due Wed 4/27

Last Writing Lab -- Mon 5/2

Last Lecture -- Tues 5/3 (Reading Day: Thurs 5/5)

Last Office Hours -- Wed 5/11 (format TBD)

Final Exam -- Wed 5/11, 7:00 pm -10:00 pm in-person

Research Paper Format Requirement Reminders

In general, follow the IJOIS Style Guide.
See specific instructions for issues such as capitalization, numbers, punctuation, dates, and more.

APA in-text parenthetical citation key to references page.

5-6 page length is the length of the body of the paper (not including cover page, references, or figures/tables).

Minimum of six carefully chosen sources (minimum one book, book chapter, or peer reviewed paper; no more than two assigned readings; no more than two newspaper articles; no lecture-discussion slides; only approved online documents).

Properly formatted cover page (header block, descriptive title) with abstract (max. half-page).

Headings used in the body of the paper.

No content footnotes or endnotes.

Numbered pages, with first page as initial body page.

No more than two figures/tables, properly references in the body of the paper.

See RPv1 and RPv2 for format requirements detail.

Revising Sentences

To create a formal tone that is direct and concise:

- Avoid colloquialisms and contractions.
- Focus on the technical / research matter and not the writer / researcher.
- **Begin each sentence with its main topic (not a prepositional phrase or a pronoun).**
- **Avoid weak expletives at the beginning of clauses (e.g., it is, there is).**
- **Use active verbs; avoid overusing "being verbs."**
- **Eliminate unnecessary prepositional phrases, adjectives, and adverbs.**
- Make referents and antecedents clear.
- Choose simple words over complex ones if the meaning is the same.
- Keep descriptions lean.
- Qualify when necessary but avoid hedging too much.
- Break up sentences that become too long.

Sources: Middlebury College Write Like a Scientist/Conciseness

Original: <u>The lack of any knowledge on the part of</u> the investigators about local conditions <u>precluded determination of</u> committee action effectiveness <u>in fund allocation</u> to <u>those</u> areas i<u>n greatest need of</u> assistance.

Revision: Because the investigators did not know anything about local conditions, they could not determine how effectively the committee had allocated funds to the areas that most needed assistance.

Original: When <u>there is decay of</u> a radioactive substance, t<u>here is the emission</u> of some form of a high-energy particle an alpha particle, a beta particle, or a gamma ray.

Revision: When a radioactive substance decays, a high-energy particle is emitted (i.e., an alpha particle, a beta particle, or a gamma ray).

Original: <u>Both of</u> the two samples had <u>very</u> similar concentrations.

Revision: The two samples had similar concentrations.   OR   Both samples had similar concentrations.

Original:: The outcome <u>is dependent</u> on the data.

Revision: The outcome <u>depends</u> on the data.

(1) Given what we've learned in class, why might John McCain (then Armed Services Chairman) not have been confident in US missile defense systems to counter a nuclear missile threat from NoKo? Why are missile interceptors considered flawed?

(2) Note the alternative strategies discussed -- left of launch cyber-capabilities designed to hack rocket systems and preemptive strikes on missile launch pads or missiles themselves -- why might these be thought of as better ways to address the threat?

An abstract is a summary of a research paper.

Interest: After reading an abstract, the reader should know whether reading about the research in more detail will be worthwhile to them, given their research interests.

Indexing: Abstracts are used to index research papers, so using the key words and phrases known and searched by other researchers in the field becomes an important way to ensure your work is included in their search results.

Sources: GMU Writing Center, Celia Elliott, UNC Writing Center

In the sciences, social sciences, and engineering, abstracts tend to follow the **IMRAD** (introduction, method, results, and discussion) organizational pattern -- **all four points must be addressed and in the following order**:

1. Introduction and Motivation: Why did we do this research? What problem were we trying to solve or better define? Why was this problem worth investigating? (typically 25% of abstract length)

2. Method: How did we set bounds / define our investigation? What research method(s) and design did we use? (~25%)

3. Results: What were our key findings? (~35%)

4. Discussion: What can we conclude from these key findings? What implications do they have for the problem that we were trying to solve or better define? (~15%)

In the humanities, abstracts tend to provide instead introduction/motivation, research focus and thesis, major arguments, and discussion / conclusions. Method is often implied or omitted.

Abstracts...

- inform readers about the main features of a paper (i.e., main hypotheses tested, important results), rather than evaluating and/or defending it or describing its characteristics
- may be more than one paragraph; can run up to two paragraphs usually
- meet a specific word count without going over
- are self-contained; i.e., understandable to readers without their needing to refer to the paper or to outside research
- are expressed in text (no visual elements, equations, etc.) and in the same style as the paper
- use concrete and quantified language, express logical relationships with precision
- employ key words and phrases from the research field
- spell out acronyms but don't define terms (save that for the paper)

vs summaries: Abstracts are a type of summary, ones that employ the conventions of their research discipline, such as by reflecting the organizational pattern of the summarized paper (dissertation, book, etc.).

vs introductions: Research paper introductions usually state the motivation for research and the problem investigated, without yet providing the key findings or discussing their importance. So, an abstract that only restates an introduction would be incomplete and likely to go into too much detail about the motivation and problem.

Abstract

The Treaty on the Prohibition of Nuclear Weapons requires nuclear-armed states that join the treaty while still possessing "nuclear weapons or other nuclear explosive devices" to "destroy them as soon as possible but not later than a deadline to be determined by the first meeting of States Parties." **[< Motivation]** This article examines technical issues that can inform this deadline decision. It outlines the processes and issues involved in the dismantlement and destruction of a nuclear weapon relevant to the purposes of meeting this treaty obligation. **[< Problem Definition]** It uses publicly available information on the size and evolution of nuclear weapon stockpiles and declared and estimated rates of warhead dismantlement to assess the time it may take to dismantle and destroy current weapon stockpiles, including weapons already scheduled for dismantlement. **[< Method]** It focuses on the United States and Russia which possess the largest arsenals, but includes discussions of other weapon states as well. **[< Sets Bounds for Investigation]** The findings suggest that a TPNW deadline of 10 years for nuclear weapon destruction, with a possible 10 year extension. **[< Findings]**

In the wild, abstracts often vary from the patterns prescribed in technical writing classrooms. They vary by author preference as well as by disciplinary, methodological, and even journal conventions. Always read a range of abstracts from the journal where you intend to publish before submitting your own. Look for articles on studies that use an approach that is similar to yours.

Abstract for RPv1/2 by *Veteran TA Maxx Villotti, as published in IJOIS, Vol. 2, No. 1 (2016)*

Paper Title: The Current State of the US Nuclear Arsenal

Abstract

The US nuclear arsenal has reached a critical point in its existence. **[< Motivation]** Approaching the end of their service lives, the weapons that make up the current arsenal must either be upgraded or replaced in order to maintain their effectiveness as deterrents. Nuclear deterrence is still necessary to prevent other states from deploying nuclear weapons, and the arsenal in its current state will not be able to serve this purpose in the near future. [**< Problem Analysis]** To create a long-term, reliable nuclear deterrent, it is recommended that the current weapons in the US nuclear arsenal be replaced with a Reliable Replacement Weapon. **[< Recommendation]** Current Life Extension Programs are short-term solutions that do not guarantee the United States will have a modern, reliable nuclear force well into the twenty-first century. **[< Discussion]**

Why does this abstract's structure work? It mirrors the expected (and actual) organization of the research paper for which it serves as a summary. It motivates a problem, states findings from an investigation of the problem, and explains why these findings matter. Presumably, the details of the investigation and findings will be revealed in the full-length paper.