Abstracts

• Abstracts are a critical part of a research paper.
• They create the first impression (and sometimes only impression) of the paper for the reader.
• Abstracts are archived in library indices.
• 500-1000: 1 ratio abstract:paper readership

Professional Impacts of abstracts

• Used in screening of submitted papers by journal or conference editors
• Gives first impression of your paper to the reviewer.
• Combined with Introduction gives reviewer a strong pre-disposition / bias.
• Used repeatedly as reminder to researchers of contents of the paper.

Societal Impacts of abstracts

• “exaggerated and inappropriate coverage of research findings in the news media” is ultimately related to inaccurately reporting or over-interpreting research results in many abstract conclusions. PLOS Medicine 2012
• “inconsistencies in data between abstract and body and reporting of data and other information solely in the abstract are relatively common....” JAMA 1998

Some definitions of abstract

“A condensation and concentration of the essential qualities of the paper.” Landes, 1951
“Abstracts are a freeze-dried version of your paper.” Lowman 1988
“A concise summary of the paper’s aims, scope, and conclusions.” Zobel, 2006
“An abbreviated version of the paper, written for people who may never read the complete version.” Matthews and Matthews 2007

What the abstract should accomplish

• Motivate the new reader to learn more about the research.
• Provide the take-away, the freeze-dried summary of your work.
• Provide enough concrete detail for people who have read the paper to utilize when they refer to your work.
• Stand on its own merits.
What the abstract should not be

• Not a mini-introduction to the paper.
• Not a reproduction of sentences directly from the body of the paper.
• Not an expanded title nor a table of contents.

Tips for writing abstracts

• Write the abstract last.
• Allow adequate time.
• Revise, re-edit, invite review by colleagues.
• Use keywords from the area of research.
• Use concrete facts, results, concepts.
• No quotations, citations, footnotes.
• Avoid unfamiliar acronyms, abbreviations, jargon.
• Stick to required word length (sometimes these are HARD limits.)
• Limit to a single paragraph.
• Adhere to the standards in your field, conference, etc.
• Debatable issues is target audience: expert vs. broader.

Example abstract (poor)

Intrusion detection with neural networks and fuzzy logic

Abstract: With the continuous growth of the Internet, security intrusions became an ever bigger problem for the information society. Intrusion detection systems are intended to alert system administrators to suspicious events in log files, to help in rapid discovery and remediation of security incidents. In this work, we have used a novel type of neural network combined with a fuzzy logic classifier. We believe that this approach can substantially improve the state of the art.

Example abstract (better???)

Intrusion detection with neural networks and fuzzy logic

Abstract: In the learning phase, we fed our FuzzyIDS with the system-call section of the BLAFAST competition log-file training corpus. We first normalized function names using Hugh's method, then converted function call parameters into 6-element feature vectors using a slight modification of the Swift-S1 preprocessor. The resulting 3,200 vectors were randomly split into four groups to train four instances of the 4-layer backpropagation network in the GNU R neural-network toolbox. Each trained network was then fed again with all 3,200 vectors, and the resulting output used to train McClaugh's FuzzyCris classifier. The mean rate achieved by FuzzyIDS on the test set is 56%, better than the BLAFAST winner, at a comparable CPU load.

Structure of the abstract

Model A: four parts

A1. Motivation or statement of problem
A2. Methods or approach.
A3. Results or product
A4. Conclusions or Implications

Note: Adhere to conventions in your field, the type of paper, and target audience

Model B: Six Steps – one sentence each (www.easterbrook.ca)

B1: Introduction
B2: State the problem you tackle
B3: State why nobody else has adequately addressed the research question yet.
B4: Explain your solution to the research question.
B5: How did you go about doing the research.
B6: What is the key impact of your research.
Title of the paper

- Declarative vs. descriptive
- Long vs. short
- Unconventional vs. standard
- If a series of papers, use consistent informative titles.
- Adhere to standards and conventions in the field, as well as type of paper and target audience.

Examples of titles

Declarative: Selective elimination of messenger RNA prevents an incidence of untimely meiosis
Descriptive: Mechanism of DNA translocation in replicative hexameric helicase
Awkward: A Study of Chipmunk Muscle Tissue Ion Channel Amino Acid Activation Parameters
Straightforward: Amino Acid Activation of Ion Channels in Chipmunk Muscle Tissue

Examples of titles

Unconventional: Between a Rock and a Hard Place: German and Austrian Saxifragas
Unconventional: Does Saxifraga Pollen in Germany Resemble That in Austria?
Conventional: Pollen Morphology of German and Austrian Saxifraga

Unconventional: They Can Hear Your Heartbeats: Non-invasive Security for Implantable Medical Devices

Abstracts and Titles

- See in-class handouts for examples and exercises.