

Writing Research Papers

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WHAT IS SCIENCE?



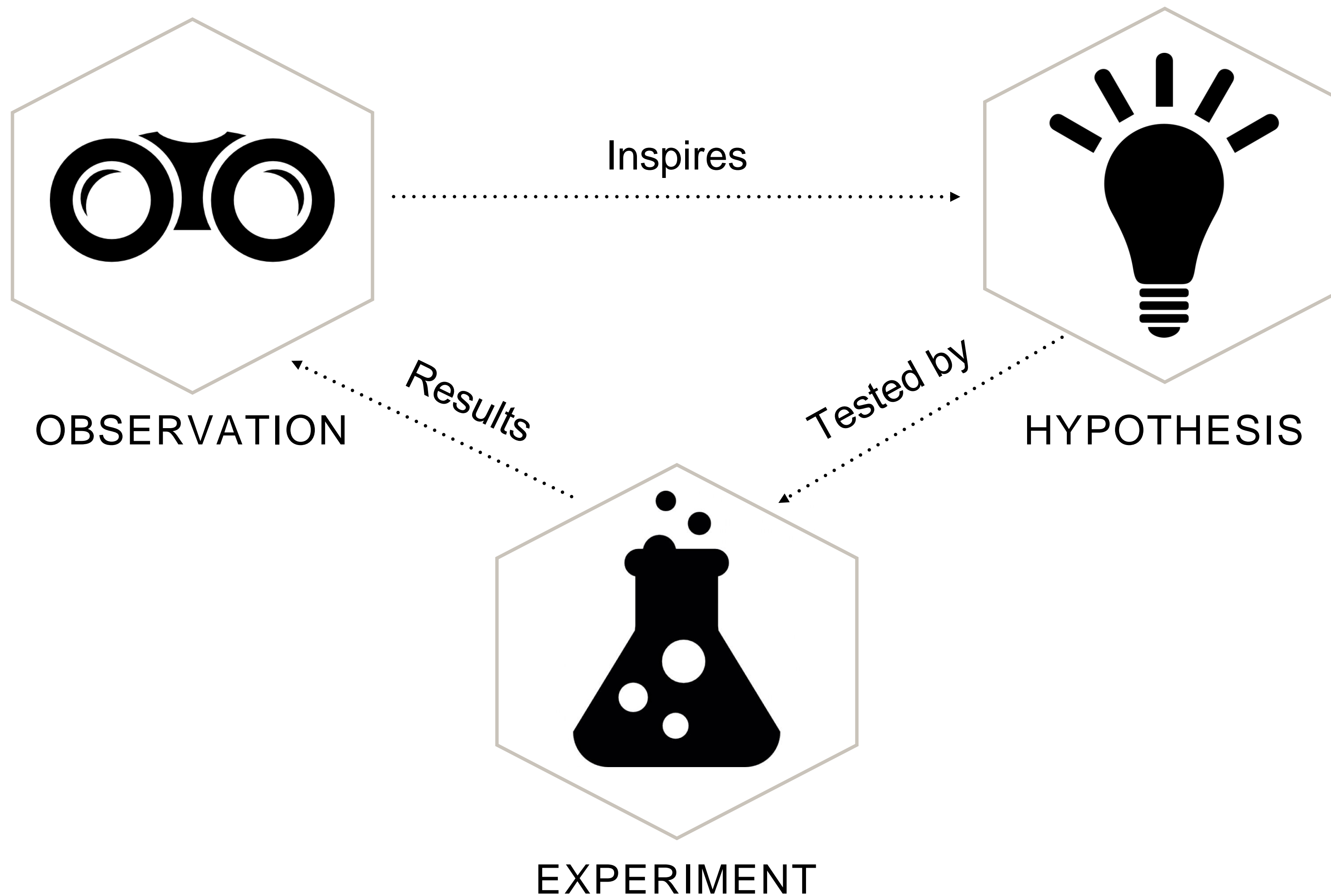
WHAT IS ACADEMIC RESEARCH?



WHAT IS THE DIFFERENCE?



The Scientific Method



The background of the slide is a blurred, high-angle photograph of a desk. It shows a stack of white papers, some of which are slightly offset, revealing the edges of the pages. A silver paperclip is visible on the right side, holding a few papers together. A dark-colored pen lies diagonally across the papers. The overall lighting is soft and even, creating a professional and academic atmosphere.

Academia' relationship to Science

Academic papers

Peer review



HOW TO WRITE RESEARCH PAPERS?



WHAT'S YOUR RESEARCH QUESTION?

REFINE AND NARROW DOWN THE TOPIC IN YOUR PRESENTATION

Find an interesting, yet under explored area in the field.

Types of research paper:

- Argumentative paper
- Analytical paper
- Survey paper
- Problem-solution paper
- Experimental paper
- Report paper



FIND OUT

WHAT HAS BEEN DONE

AND WHAT IS YET TO BE RESEARCHED



FINDING

RELEVANT RESOURCES

Google Scholar

ScienceDirect

ACM  DIGITAL
LIBRARY



IEEE *Xplore*[®]
Digital Library



Swansea University
Prifysgol Abertawe



Articles

About 3,020,000 results (0.04 sec)

Any time

Since 2019

Since 2018

Since 2015

Custom range...

Sort by relevance

Sort by date

☒ include patents

☒ include citations

☒ Create alert

That 'internet of things' thing

[K Ashton](#) - [RFID journal](#), 2009 - [itrco.jp](#)

June 22, 2009—I could be wrong, but I'm fairly sure the phrase "**Internet of Things**" started life as the title of a presentation I made at Procter & Gamble (P&G) in 1999. Linking the new idea of RFID in P&G's supply chain to the then-red-hot topic of the **Internet** was more than ...

☆ Cited by 2879 [Related articles](#) [All 3 versions](#)

The internet of things: A survey

[L Atzori](#), [A Iera](#), [G Morabito](#) - [Computer networks](#), 2010 - [Elsevier](#)

This paper addresses the **Internet of Things**. Main enabling factor of this promising paradigm is the integration of several technologies and communications solutions. Identification and tracking technologies, wired and wireless sensor and actuator networks, enhanced ...

☆ Cited by 9712 [Related articles](#) [All 31 versions](#) [Web of Science: 3918](#)

[\[PDF\] mun.ca](#)
[iGetIt@Swansea](#)

Internet of Things (IoT): A vision, architectural elements, and future directions

[J Gubbi](#), [R Buyya](#), [S Marusic](#), [M Palaniswami](#) - [Future generation computer ...](#), 2013 - [Elsevier](#)

Ubiquitous sensing enabled by Wireless Sensor Network (WSN) technologies cuts across many areas of modern day living. This offers the ability to measure, infer and understand environmental indicators, from delicate ecologies and natural resources to urban ...

☆ Cited by 5929 [Related articles](#) [All 39 versions](#) [Web of Science: 2402](#)

[\[PDF\] arxiv.org](#)
[iGetIt@Swansea](#)

Fog computing and its role in the internet of things

[F Bonomi](#), [R Milito](#), [J Zhu](#), [S Addepalli](#) - [Proceedings of the first edition of ...](#), 2012 - [dl.acm.org](#)

Abstract Fog Computing extends the Cloud Computing paradigm to the edge of the network, thus enabling a new breed of applications and services. Defining characteristics of the Fog are: a) Low latency and location awareness; b) Wide-spread geographical distribution; c) ...

[\[PDF\] researchgate.net](#)



♦ Computer science specific:

- IEEE explore
- ACM digital library
- Springer's LNCS series
- arXiv

♦ Generalist

- SCOPUS
- Web of Science

♦ Medical

- PubMed
- Cochrane Library

Etc.



**WHAT ARE WE
TRYING TO FIND OUT**

METHODOLOGY

THINK OF THE MOST APPROPRIATE WAY
TO ANSWER YOUR RESEARCH QUESTION

Quantitative methods:

Explaining phenomena by collecting numerical data that are analysed using mathematically based methods (in particular statistics)

Qualitative methods:

Discovering why and how people behave in the way that they do to provide in-depth information about human behaviour

T **YPICAL** **PAPER STRUCTURE**

Typical Paper structure

1. Abstract
2. Introduction
3. Literature review
4. Methodology
5. Results
6. Discussion
7. Conclusions

SIGCHI Conference Proceedings Format

Leave Authors Anonymous
for Submission
City, Country
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City, Country
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ABSTRACT

UPDATED—February 20, 2018. This sample paper describes the formatting requirements for SIGCHI conference proceedings, and offers recommendations on writing for the worldwide SIGCHI readership. Please review this document even if you have submitted to SIGCHI conferences before, as some format details have changed relative to previous years. Abstracts should be about 150 words and are required.

ACM Classification Keywords

H.5.m. Information Interfaces and Presentation (e.g. HCI): Miscellaneous; See <http://acm.org/about/class/1998/> for the full list of ACM classifiers. This section is required.

Author Keywords

Authors' choice; of terms; separated; by semicolons; include commas, within terms only; required.

INTRODUCTION

This format is to be used for submissions that are published in the conference proceedings. We wish to give this volume a consistent, high-quality appearance. We therefore ask that authors follow some simple guidelines. You should format your paper exactly like this document. The easiest way to do this is to replace the content with your own material. This document describes how to prepare your submissions using L^AT_EX.

PAGE SIZE AND COLUMNS

On each page your material should fit within a rectangle of 7 × 9.15 inches (18 × 23.2 cm), centered on a US Letter page (8.5 × 11 inches), beginning 0.85 inches (1.9 cm) from the top of the page, with a 0.3 inches (0.85 cm) space between two 3.35 inches (8.4 cm) columns. Right margins should be justified, not ragged. Please be sure your document and PDF are US letter and not A4.

TYPESET TEXT

The styles contained in this document have been modified from the default styles to reflect ACM formatting conventions.

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CHI '16, May 07–12, 2016, San Jose, CA, USA

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DOI: http://dx.doi.org/10.475/123_4

For example, content paragraphs like this one are formatted using the Normal style.

L^AT_EX sometimes will create overfull lines that extend into columns. To attempt to combat this, the .cls file has a command, \sloppy, that essentially asks L^AT_EX to prefer underfull lines with extra whitespace. For more details on this, and info on how to control it more finely, check out <http://www.economics.utoronto.ca/osborne/latex/PMAKEUP.HTM>.

Title and Authors

Your paper's title, authors and affiliations should run across the full width of the page in a single column 17.8 cm (7 in.) wide. The title should be in Helvetica or Arial 18-point bold. Authors' names should be in Times New Roman or Times Roman 12-point bold, and affiliations in 12-point regular.

See \author section of this template for instructions on how to format the authors. For more than three authors, you may have to place some address information in a footnote, or in a named section at the end of your paper. Names may optionally be placed in a single centered row instead of at the top of each column. Leave one 10-point line of white space below the last line of affiliations.

Abstract and Keywords

Every submission should begin with an abstract of about 150 words, followed by a set of Author Keywords and ACM Classification Keywords. The abstract and keywords should be placed in the left column of the first page under the left half of the title. The abstract should be a concise statement of the problem, approach, and conclusions of the work described. It should clearly state the paper's contribution to the field of HCI.

Normal or Body Text

Please use a 10-point Times New Roman or Times Roman font or, if this is unavailable, another proportional font with serifs, as close as possible in appearance to Times Roman 10-point. Other than Helvetica or Arial headings, please use sans-serif or non-proportional fonts only for special purposes, such as source code text.

First Page Copyright Notice

This template include a sample ACM copyright notice at the bottom of page 1, column 1. Upon acceptance, you will be provided with the appropriate copyright statement and unique DOI string for publication. Accepted papers will be distributed in the conference publications. They will also be placed in the ACM Digital Library, where they will remain



GENERAL TIPS ON WRITING,

- Write abstract, introduction, and conclusions last
- Do literature review thoroughly
- Write methodology and results first
- Keep results and discussion separate

K
EEP
THE AUDIENCE IN MIND



WHAT MAKES A WELL-WRITTEN PAPER?

CLARITY

Make sure your reader understands what you are saying

CONCISENESS

Avoid long and complex explanations — short and simple explanations are more effective

CONTRIBUTION

What are you doing that makes your paper worth my time?

ORIGINALITY

What is novel about your research that has not yet been done?

VALIDITY

Is the methodology you used to conduct your research sound, are the results correctly analysed and described?

FORMATTING

Check the requirements for the conference/journal of your choice
and download a template for LaTeX or Word



Referencing style

Accessibility:

- Ensure that built-in styles are used (*headings, sections, etc.*)
- Add alternative text to all figures (*provide a title of the image and a text description of the image*)
- Mark table headers
- Set the document language

WORD OR LATEX?

Word

sequence (in any order). Formally, we say that a rule $I_a \Rightarrow I_b$ occurs in a sequence $s = \langle I_1, I_2, \dots, I_n \rangle$ if and only if there exists an integer k such that $1 \leq k < n$, $I_a \subseteq \bigcup_{i=1}^k I_i$ and $I_b \subseteq \bigcup_{i=k+1}^n I_i$.

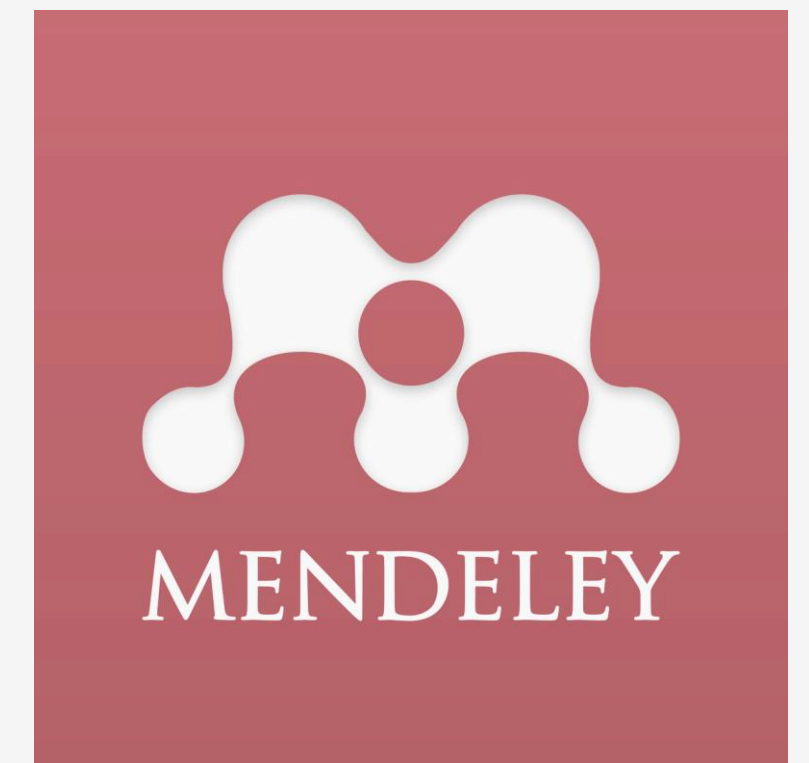
Latex

same sequence (in any order). Formally, we say that a rule $I_a \Rightarrow I_b$ occurs in a sequence $s = \langle I_1, I_2, \dots, I_n \rangle$ if and only if there exists an integer k such that $1 \leq k < n$, $I_a \subseteq \bigcup_{i=1}^k I_i$ and $I_b \subseteq \bigcup_{i=k+1}^n I_i$.

REFERENCE

YOUR SOURCES

- Harvard
- Oxford
- APA
- Chicago
- Vancouver
- MHRA
- OSCOLA
- Etc.





PROOF-READ YOUR PAPER!

- Sense to a non-expert: would someone not familiar with the area understand this?
- Consistency: Tenses, pronouns, terms (e.g. elderly, retired, senior, older)
- Precision or ambiguity: Not descriptive terms and sentences
- Connectivity: I have to read this several times
- Waffle or padding: Extra information that serves no additional value
- Format and length: Worry about this last
- Properly anonymised (*not for our assignment*)

LAST, BUT NOT LEAST...

TITLE



MEMORABLE AND DESCRIPTIVE

Some of my favourites...

“Watts in it for me?: design implications for implementing effective energy interventions in organisations”

“I can't get no sleep: discussing# insomnia on twitter”

“CHI and the future robot enslavement of humankind: a retrospective”

“Crowd saucing: social technology for encouraging healthier eating”

“Grand Push Auto: A car based exertion game”

EXAMPLE



LOOK AT THIS CHI PAPER IN PAIRS/GROUPS OF THREE
DISCUSS WHAT YOU LIKE ABOUT THE PAPER
AND WHAT MIGHT BE ITS DRAWBACKS