

Use Cases in Big Data Software and Analytics

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My great Big Dat Paper

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ABSTRACT

This paper provides a sample of a \LaTeX document which conforms, somewhat loosely, to the formatting guidelines for ACM SIG Proceedings.

KEYWORDS

ACM proceedings, \LaTeX , text tagging

1 INTRODUCTION

This is my Intro

2 THE BODY OF THE PAPER

3 CONCLUSIONS

This is my conclusion.

ACKNOWLEDGMENTS

The authors would like to thank Dr. Yuhua Li for providing the matlab code of the *BEPS* method.

My great Big Dat Paper

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1 INTRODUCTION

The *proceedings* are the records of a conference. ACM seeks to give these conference by-products a uniform, high-quality appearance. To do this, ACM has some rigid requirements for the format of the proceedings documents: there is a specified format (balanced double columns), a specified set of fonts (Arial or Helvetica and Times Roman) in certain specified sizes, a specified live area, centered on the page, specified size of margins, specified column width and gutter size [1].

ACKNOWLEDGMENTS

The authors would like to thank

REFERENCES

- [1] Ian Editor (Ed.). 2007. *The title of book one* (1st. ed.). The name of the series one, Vol. 9. University of Chicago Press, Chicago. <https://doi.org/10.1007/3-540-09237-4>

What Separates "Big Data" from "Lots of Data"

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ABSTRACT

In this paper, we will briefly analyze the history of data to show how having "lots of data" stored in large databases hardly differs from data storage and analysis in the early days of SQL, or even before computers. We then explain how "big data" represents a paradigmatic shift from traditional large data storage and analysis. We conclude that organizations that do not understand this paradigmatic shift are more likely to fail in big data projects.

KEYWORDS

i523

1 INTRODUCTION

This is my introduction. [1]

2 CONCLUSIONS

I conclude that...

ACKNOWLEDGMENTS

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REFERENCES

- [1] Carl Lagoze. 2014. Big Data, data integrity, and the fracturing of the control zone. *Big Data and Society* (NO 2014). <https://doi.org/10.1177/2053951714558281>

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2 THE BODY OF THE PAPER

Typically, the body of a paper is organized into a hierarchical structure, with numbered or unnumbered headings for sections, subsections, sub-subsections, and even smaller sections. The command `\section` that precedes this paragraph is part of such a hierarchy. \LaTeX handles the numbering and placement of these headings for you, when you use the appropriate heading commands around the titles of the headings. If you want a sub-subsection or smaller part to be unnumbered in your output, simply append an asterisk to the command name. Examples of both numbered and unnumbered headings will appear throughout the balance of this sample document.

Because the entire article is contained in the **document** environment, you can indicate the start of a new paragraph with a blank line in your input file; that is why this sentence forms a separate paragraph.

2.1 Type Changes and *Special Characters*

We have already seen several typeface changes in this sample. You can indicate italicized words or phrases in your text with the command `\textit`; emboldening with the command `\textbf` and typewriter-style (for instance, for computer code) with `\texttt`. But remember, you do not have to indicate typestyle changes when such changes are part of the *structural* elements of your article; for instance, the heading of this subsection will be in a sans serif¹ typeface, but that is handled by the document class file. Take care

¹Another footnote here. Let's make this a rather long one to see how it looks. Footnotes must be avoided.

with the use of the curly braces in typeface changes; they mark the beginning and end of the text that is to be in the different typeface.

You can use whatever symbols, accented characters, or non-English characters you need anywhere in your document; you can find a complete list of what is available in the *\LaTeX User's Guide* [25].

2.2 Math Equations

You may want to display math equations in three distinct styles: inline, numbered or non-numbered display. Each of the three are discussed in the next sections.

2.2.1 Inline (In-text) Equations. A formula that appears in the running text is called an inline or in-text formula. It is produced by the **math** environment, which can be invoked with the usual `\begin . . . \end` construction or with the short form `$. . . $`. You can use any of the symbols and structures, from α to ω , available in \LaTeX [25]; this section will simply show a few examples of in-text equations in context. Notice how this equation:

$$\lim_{n \rightarrow \infty} x = 0,$$

set here in in-line math style, looks slightly different when set in display style. (See next section).

2.2.2 Display Equations. A numbered display equation—one set off by vertical space from the text and centered horizontally—is produced by the **equation** environment. An unnumbered display equation is produced by the **displaymath** environment.

Again, in either environment, you can use any of the symbols and structures available in \LaTeX ; this section will just give a couple of examples of display equations in context. First, consider the equation, shown as an inline equation above:

$$\lim_{n \rightarrow \infty} x = 0 \tag{1}$$

Notice how it is formatted somewhat differently in the **displaymath** environment. Now, we'll enter an unnumbered equation:

$$\sum_{i=0}^{\infty} x + 1$$

and follow it with another numbered equation:

$$\sum_{i=0}^{\infty} x_i = \int_0^{\pi+2} f \tag{2}$$

just to demonstrate \LaTeX 's able handling of numbering.

2.3 Citations

Citations to articles [6–8, 18], conference proceedings [8] or maybe books [25, 33] listed in the Bibliography section of your article will

occur throughout the text of your article. You should use BibTeX to automatically produce this bibliography; you simply need to insert one of several citation commands with a key of the item cited in the proper location in the .tex file [25]. The key is a short reference you invent to uniquely identify each work; in this sample document, the key is the first author's surname and a word from the title. This identifying key is included with each item in the .bib file for your article.

The details of the construction of the .bib file are beyond the scope of this sample document, but more information can be found in the *Author's Guide*, and exhaustive details in the *L^AT_EX User's Guide* by L^Ampert [25].

This article shows only the plainest form of the citation command, using \cite.

Some examples. A paginated journal article [2], an enumerated journal article [11], a reference to an entire issue [10], a monograph (whole book) [24], a monograph/whole book in a series (see 2a in spec. document) [17], a divisible-book such as an anthology or compilation [13] followed by the same example, however we only output the series if the volume number is given [14] (so Editor00a's series should NOT be present since it has no vol. no.), a chapter in a divisible book [36], a chapter in a divisible book in a series [12], a multi-volume work as book [23], an article in a proceedings (of a conference, symposium, workshop for example) (paginated proceedings article) [4], a proceedings article with all possible elements [35], an example of an enumerated proceedings article [15], an informally published work [16], a doctoral dissertation [9], a master's thesis: [5], an online document / world wide web resource [1, 29, 37], a video game (Case 1) [28] and (Case 2) [27] and [26] and (Case 3) a patent [34], work accepted for publication [30], 'YYYYb'-test for prolific author [31] and [32]. Other cites might contain 'duplicate' DOI and URLs (some SIAM articles) [22]. Boris / Barbara Beeton: multi-volume works as books [20] and [19].

A couple of citations with DOIs: [21, 22].

Online citations: [37–39].

We use jabref to manage all citations. A paper without managing a bib file will be returned without review. in the bibtex file all urls are added to rfernces with the url filed. They are not to be included in the *howpublished* or *note* field.

2.4 Theorem-like Constructs

Other common constructs that may occur in your article are the forms for logical constructs like theorems, axioms, corollaries and proofs. ACM uses two types of these constructs: theorem-like and definition-like.

Here is a theorem:

THEOREM 2.1. *Let f be continuous on $[a, b]$. If G is an antiderivative for f on $[a, b]$, then*

$$\int_a^b f(t) dt = G(b) - G(a).$$

Here is a definition:

Definition 2.2. *If z is irrational, then by e^z we mean the unique number that has logarithm z :*

$$\log e^z = z.$$

The pre-defined theorem-like constructs are **theorem**, **conjecture**, **proposition**, **lemma** and **corollary**. The pre-defined definition-like constructs are **example** and **definition**. You can add your own constructs using the *amsthm* interface [3]. The styles used in the \theoremstyle command are **acmplain** and **acmdefinition**.

Another construct is **proof**, for example,

PROOF. Suppose on the contrary there exists a real number L such that

$$\lim_{x \rightarrow \infty} \frac{f(x)}{g(x)} = L.$$

Then

$$l = \lim_{x \rightarrow c} f(x) = \lim_{x \rightarrow c} \left[gx \cdot \frac{f(x)}{g(x)} \right] = \lim_{x \rightarrow c} g(x) \cdot \lim_{x \rightarrow c} \frac{f(x)}{g(x)} = 0 \cdot L = 0,$$

which contradicts our assumption that $l \neq 0$. \square

3 CONCLUSIONS

This paragraph will end the body of this sample document. Remember that you might still have Acknowledgments or Appendices; brief samples of these follow. There is still the Bibliography to deal with; and we will make a disclaimer about that here: with the exception of the reference to the L^AT_EX book, the citations in this paper are to articles which have nothing to do with the present subject and are used as examples only.

Generated by bibtex from your .bib file. Run latex, then bibtex, then latex twice (to resolve references) to create the .bbl file. Insert that .bbl file into the .tex source file and comment out the command \thebibliography.

4 MORE HELP FOR THE HARDY

Of course, reading the source code is always useful. The file acmart.pdf contains both the user guide and the commented code.

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REFERENCES

- [1] Rafal Ablamowicz and Bertfried Fauser. 2007. CLIFFORD: a Maple 11 Package for Clifford Algebra Computations, version 11. (2007). Retrieved February 28, 2008 from <http://math.tntech.edu/rafal/cliff11/index.html>
- [2] Patricia S. Abril and Robert Plant. 2007. The patent holder's dilemma: Buy, sell, or troll? *Commun. ACM* 50, 1 (Jan. 2007), 36–44. <https://doi.org/10.1145/1188913>.
- [3] American Mathematical Society 2015. *Using the amsthm Package*. American Mathematical Society. <http://www.ctan.org/pkg/amsthm>
- [4] Sten Andler. 1979. Predicate Path expressions. In *Proceedings of the 6th. ACM SIGACT-SIGPLAN symposium on Principles of Programming Languages (POPL '79)*. ACM Press, New York, NY, 226–236. <https://doi.org/10.1145/567752.567774>
- [5] David A. Anisi. 2003. *Optimal Motion Control of a Ground Vehicle*. Master's thesis. Royal Institute of Technology (KTH), Stockholm, Sweden.
- [6] Mic Bowman, Saumya K. Debray, and Larry L. Peterson. 1993. Reasoning About Naming Systems. *ACM Trans. Program. Lang. Syst.* 15, 5 (November 1993), 795–825. <https://doi.org/10.1145/161468.161471>
- [7] Johannes Braams. 1991. Babel, a Multilingual Style-Option System for Use with LaTeX's Standard Document Styles. *TUGboat* 12, 2 (June 1991), 291–301.

- [8] Malcolm Clark. 1991. Post Congress Tristesse. In *TeX90 Conference Proceedings*. TeX Users Group, 84–89.
- [9] Kenneth L. Clarkson. 1985. *Algorithms for Closest-Point Problems (Computational Geometry)*. Ph.D. Dissertation. Stanford University, Palo Alto, CA. UMI Order Number: AAT 8506171.
- [10] Jacques Cohen (Ed.). 1996. Special issue: Digital Libraries. *Commun. ACM* 39, 11 (Nov. 1996).
- [11] Sarah Cohen, Werner Nutt, and Yehoshua Sagie. 2007. Deciding equivalences among conjunctive aggregate queries. *J. ACM* 54, 2, Article 5 (April 2007), 50 pages. <https://doi.org/10.1145/1219092.1219093>
- [12] Bruce P. Douglass, David Harel, and Mark B. Trakhtenbrot. 1998. Statecharts in use: structured analysis and object-orientation. In *Lectures on Embedded Systems*, Grzegorz Rozenberg and Frits W. Vaandrager (Eds.). Lecture Notes in Computer Science, Vol. 1494. Springer-Verlag, London, 368–394. https://doi.org/10.1007/3-540-65193-4_29
- [13] Ian Editor (Ed.). 2007. *The title of book one* (1st. ed.). The name of the series one, Vol. 9. University of Chicago Press, Chicago. <https://doi.org/10.1007/3-540-09237-4>
- [14] Ian Editor (Ed.). 2008. *The title of book two* (2nd. ed.). University of Chicago Press, Chicago, Chapter 100. <https://doi.org/10.1007/3-540-09237-4>
- [15] Matthew Van Gundy, Davide Balzarotti, and Giovanni Vigna. 2007. Catch me, if you can: Evading network signatures with web-based polymorphic worms. In *Proceedings of the first USENIX workshop on Offensive Technologies (WOOT '07)*. USENIX Association, Berkeley, CA, Article 7, 9 pages.
- [16] David Harel. 1978. *LOGICS of Programs: AXIOMATICS and DESCRIPTIVE POWER*. MIT Research Lab Technical Report TR-200. Massachusetts Institute of Technology, Cambridge, MA.
- [17] David Harel. 1979. *First-Order Dynamic Logic*. Lecture Notes in Computer Science, Vol. 68. Springer-Verlag, New York, NY. <https://doi.org/10.1007/3-540-09237-4>
- [18] Maurice Herlihy. 1993. A Methodology for Implementing Highly Concurrent Data Objects. *ACM Trans. Program. Lang. Syst.* 15, 5 (November 1993), 745–770. <https://doi.org/10.1145/161468.161469>
- [19] Lars Hörmander. 1985. *The analysis of linear partial differential operators. III*. Grundlehren der Mathematischen Wissenschaften [Fundamental Principles of Mathematical Sciences], Vol. 275. Springer-Verlag, Berlin, Germany. viii+525 pages. Pseudodifferential operators.
- [20] Lars Hörmander. 1985. *The analysis of linear partial differential operators. IV*. Grundlehren der Mathematischen Wissenschaften [Fundamental Principles of Mathematical Sciences], Vol. 275. Springer-Verlag, Berlin, Germany. vii+352 pages. Fourier integral operators.
- [21] IEEE. 2004. IEEE TCSC Executive Committee. In *Proceedings of the IEEE International Conference on Web Services (ICWS '04)*. IEEE Computer Society, Washington, DC, USA, 21–22. <https://doi.org/10.1109/ICWS.2004.64>
- [22] Markus Kirschmer and John Voight. 2010. Algorithmic Enumeration of Ideal Classes for Quaternion Orders. *SIAM J. Comput.* 39, 5 (Jan. 2010), 1714–1747. <https://doi.org/10.1137/080734467>
- [23] Donald E. Knuth. 1997. *The Art of Computer Programming, Vol. 1: Fundamental Algorithms (3rd. ed.)*. Addison Wesley Longman Publishing Co., Inc.
- [24] David Kosier. 2001. *Understanding Policy-Based Networking* (2nd. ed.). Wiley, New York, NY.
- [25] Leslie Lamport. 1986. *LaTeX: A Document Preparation System*. Addison-Wesley, Reading, MA.
- [26] Newton Lee. 2005. Interview with Bill Kinder: January 13, 2005. Video. *Comput. Entertain.* 3, 1, Article 4 (Jan.-March 2005). <https://doi.org/10.1145/1057270.1057278>
- [27] Dave Novak. 2003. Solder man. Video. In *ACM SIGGRAPH 2003 Video Review on Animation theater Program: Part I - Vol. 145 (July 27–27, 2003)*. ACM Press, New York, NY, 4. <https://doi.org/99.9999/woot07-S422>
- [28] Barack Obama. 2008. A more perfect union. Video. (5 March 2008). Retrieved March 21, 2008 from <http://video.google.com/videoplay?docid=6528042696351994555>
- [29] Poker-Edge.Com. 2006. Stats and Analysis. (March 2006). Retrieved June 7, 2006 from <http://www.poker-edge.com/stats.php>
- [30] Bernard Rous. 2008. The Enabling of Digital Libraries. *Digital Libraries* 12, 3, Article 5 (July 2008). To appear.
- [31] Mehdi Saeedi, Morteza Saheb Zamani, and Mehdi Sedighi. 2010. A library-based synthesis methodology for reversible logic. *Microelectron. J.* 41, 4 (April 2010), 185–194.
- [32] Mehdi Saeedi, Morteza Saheb Zamani, Mehdi Sedighi, and Zahra Sasanian. 2010. Synthesis of Reversible Circuit Using Cycle-Based Approach. *J. Emerg. Technol. Comput. Syst.* 6, 4 (Dec. 2010).
- [33] S.L. Salas and Einar Hille. 1978. *Calculus: One and Several Variable*. John Wiley and Sons, New York.
- [34] Joseph Scientist. 2009. The fountain of youth. (Aug. 2009). Patent No. 12345, Filed July 1st., 2008, Issued Aug. 9th., 2009.
- [35] Stan W. Smith. 2010. An experiment in bibliographic mark-up: Parsing metadata for XML export. In *Proceedings of the 3rd. annual workshop on Librarians and Computers (LAC '10)*, Reginald N. Smythe and Alexander Noble (Eds.), Vol. 3. Paparazzi Press, Milan Italy, 422–431. <https://doi.org/99.9999/woot07-S422>
- [36] Asad Z. Spector. 1990. Achieving application requirements. In *Distributed Systems* (2nd. ed.), Sape Mullender (Ed.). ACM Press, New York, NY, 19–33. <https://doi.org/10.1145/90417.90738>
- [37] Harry Thornburg. 2001. Introduction to Bayesian Statistics. (March 2001). Retrieved March 2, 2005 from <http://ccrma.stanford.edu/~jos/bayes/bayes.html>
- [38] TUG. 2017. Institutional members of the TeX Users Group. (2017). Retrieved May 27, 2017 from <http://wwtug.org/instmem.html>
- [39] Boris Veytsman. [n. d.]. acmart—Class for typesetting publications of ACM. ([n. d.]). Retrieved May 27, 2017 from <http://www.ctan.org/pkg/acmart>

My great Big Dat Paper

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ABSTRACT

This paper

KEYWORDS

ACM proceedings, \LaTeX , text tagging

1 INTRODUCTION

The *proceedings* are the [1]

2 THE BODY OF THE PAPER

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3 CONCLUSIONS

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ACKNOWLEDGMENTS

The authors would like to thank Dr. Yuhua Li for providing the matlab code of the *BEPS* method.

REFERENCES

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ABSTRACT

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The *proceedings* are the records of a conference. ACM seeks to give these conference by-products a uniform, high-quality appearance. To do this, ACM has some rigid requirements for the format of the proceedings documents: there is a specified format (balanced double columns), a specified set of fonts (Arial or Helvetica and Times Roman) in certain specified sizes, a specified live area, centered on the page, specified size of margins, specified column width and gutter size [1].

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REFERENCES

- [1] Ian Editor (Ed.). 2007. *The title of book one* (1st. ed.). The name of the series one, Vol. 9. University of Chicago Press, Chicago. <https://doi.org/10.1007/3-540-09237-4>

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Big Data Analytics and Edge Computing

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ABSTRACT

With the exponential increase in the number of connected IoT devices, the data generated by these devices has grown enormously. Sending this data to a centralized server or cloud results in enormous network traffic and may lead to failures and increased latency. One solution of this problem is to do some processing on the edge devices. This is extremely helpful in providing responsive and real time analytics.

1 INTRODUCTION

With the rapid increase in the acceptance of Internet of Things (IoT) devices across various fields in the world, ranging from industrial sensors to lifestyle and sports products, and the consequent increase in the data generated by such devices, there is a pressing demand for devices and processes that can analyze this data and provide responsive analytics.[1]. With increase in the number of such devices, it gets increasingly difficult to perform all analytics on a server in a traditional manner. Thus, more recent approaches aim to push a part of this computation closer to the end user of the device, or closer to the edge.

REFERENCES

- [1] Yogesh Simmhan. 2017. IoT Analytics Across Edge and Cloud Platforms. IEEE IOT Newsletter. (May 2017). <https://iot.ieee.org/newsletter/may-2017/iot-analytics-across-edge-and-cloud-platforms.html>

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ABSTRACT

This paper provides a sample of a \LaTeX document which conforms, somewhat loosely, to the formatting guidelines for ACM SIG Proceedings.

KEYWORDS

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Big Data Analytics using Spark

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ABSTRACT

This paper provides a sample of a \LaTeX document which conforms, somewhat loosely, to the formatting guidelines for ACM SIG Proceedings.

KEYWORDS

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1 INTRODUCTION

The *proceedings* are the records of a conference. ACM seeks to give these conference by-products a uniform, high-quality appearance. To do this, ACM has some rigid requirements for the format of the proceedings documents: there is a specified format (balanced double columns), a specified set of fonts (Arial or Helvetica and Times Roman) in certain specified sizes, a specified live area, centered on the page, specified size of margins, specified column width and gutter size.

2 THE BODY OF THE PAPER

Typically, the body of a paper is organized into a hierarchical structure, with numbered or unnumbered headings for sections, subsections, sub-subsections, and even smaller sections. The command `\section` that precedes this paragraph is part of such a hierarchy. \LaTeX handles the numbering and placement of these headings for you, when you use the appropriate heading commands around the titles of the headings. If you want a sub-subsection or smaller part to be unnumbered in your output, simply append an asterisk to the command name. Examples of both numbered and unnumbered headings will appear throughout the balance of this sample document.

Because the entire article is contained in the **document** environment, you can indicate the start of a new paragraph with a blank line in your input file; that is why this sentence forms a separate paragraph.

2.1 Type Changes and *Special* Characters

We have already seen several typeface changes in this sample. You can indicate italicized words or phrases in your text with the command `\textit`; emboldening with the command `\textbf` and typewriter-style (for instance, for computer code) with `\texttt`. But remember, you do not have to indicate typestyle changes when such changes are part of the *structural* elements of your article; for instance, the heading of this subsection will be in a sans serif¹ typeface, but that is handled by the document class file. Take care

¹Another footnote here. Let's make this a rather long one to see how it looks. Footnotes must be avoided.

with the use of the curly braces in typeface changes; they mark the beginning and end of the text that is to be in the different typeface.

You can use whatever symbols, accented characters, or non-English characters you need anywhere in your document; you can find a complete list of what is available in the *\LaTeX User's Guide* [26].

2.2 Math Equations

You may want to display math equations in three distinct styles: inline, numbered or non-numbered display. Each of the three are discussed in the next sections.

2.2.1 Inline (In-text) Equations. A formula that appears in the running text is called an inline or in-text formula. It is produced by the **math** environment, which can be invoked with the usual `\begin . . . \end` construction or with the short form `$. . . $`. You can use any of the symbols and structures, from α to ω , available in \LaTeX [26]; this section will simply show a few examples of in-text equations in context. Notice how this equation:

$$\lim_{n \rightarrow \infty} x = 0,$$

set here in in-line math style, looks slightly different when set in display style. (See next section).

2.2.2 Display Equations. A numbered display equation—one set off by vertical space from the text and centered horizontally—is produced by the **equation** environment. An unnumbered display equation is produced by the **displaymath** environment.

Again, in either environment, you can use any of the symbols and structures available in \LaTeX ; this section will just give a couple of examples of display equations in context. First, consider the equation, shown as an inline equation above:

$$\lim_{n \rightarrow \infty} x = 0 \tag{1}$$

Notice how it is formatted somewhat differently in the **displaymath** environment. Now, we'll enter an unnumbered equation:

$$\sum_{i=0}^{\infty} x + 1$$

and follow it with another numbered equation:

$$\sum_{i=0}^{\infty} x_i = \int_0^{\pi+2} f \tag{2}$$

just to demonstrate \LaTeX 's able handling of numbering.

2.3 Citations

Citations to articles [6–8, 19], conference proceedings [8] or maybe books [26, 34] listed in the Bibliography section of your article will

occur throughout the text of your article. You should use BibTeX to automatically produce this bibliography; you simply need to insert one of several citation commands with a key of the item cited in the proper location in the .tex file [26]. The key is a short reference you invent to uniquely identify each work; in this sample document, the key is the first author's surname and a word from the title. This identifying key is included with each item in the .bib file for your article.

The details of the construction of the .bib file are beyond the scope of this sample document, but more information can be found in the *Author's Guide*, and exhaustive details in the *L^AT_EX User's Guide* by Lamport [26].

This article shows only the plainest form of the citation command, using \cite.

Some examples. A paginated journal article [2], an enumerated journal article [11], a reference to an entire issue [10], a monograph (whole book) [25], a monograph/whole book in a series (see 2a in spec. document) [18], a divisible-book such as an anthology or compilation [13] followed by the same example, however we only output the series if the volume number is given [14] (so Editor00a's series should NOT be present since it has no vol. no.), a chapter in a divisible book [37], a chapter in a divisible book in a series [12], a multi-volume work as book [24], an article in a proceedings (of a conference, symposium, workshop for example) (paginated proceedings article) [4], a proceedings article with all possible elements [36], an example of an enumerated proceedings article [16], an informally published work [17], a doctoral dissertation [9], a master's thesis: [5], an online document / world wide web resource [1, 30, 38], a video game (Case 1) [29] and (Case 2) [28] and [27] and (Case 3) a patent [35], work accepted for publication [31], 'YYYYb'-test for prolific author [32] and [33]. Other cites might contain 'duplicate' DOI and URLs (some SIAM articles) [23]. Boris / Barbara Beeton: multi-volume works as books [21] and [20].

A couple of citations with DOIs: [22, 23].

Online citations: [38–40].

We use jabref to manage all citations. A paper without managing a bib file will be returned without review. in the bibtex file all urls are added to rfernces with the url filed. They are not to be included in the *howpublished* or *note* field.

2.4 Tables

Because tables cannot be split across pages, the best placement for them is typically the top of the page nearest their initial cite. To ensure this proper “floating” placement of tables, use the environment **table** to enclose the table's contents and the table caption. The contents of the table itself must go in the **tabular** environment, to be aligned properly in rows and columns, with the desired horizontal and vertical rules. Again, detailed instructions on **tabular** material are found in the *L^AT_EX User's Guide*.

Immediately following this sentence is the point at which Table 1 is included in the input file; compare the placement of the table here with the table in the printed output of this document.

[Table 1 about here.]

To set a wider table, which takes up the whole width of the page's live area, use the environment **table*** to enclose the table's contents and the table caption. As with a single-column table,

this wide table will “float” to a location deemed more desirable. Immediately following this sentence is the point at which Table 2 is included in the input file; again, it is instructive to compare the placement of the table here with the table in the printed output of this document.

[Table 2 about here.]

It is strongly recommended to use the package booktabs [15] and follow its main principles of typography with respect to tables:

- (1) Never, ever use vertical rules.
- (2) Never use double rules.

It is also a good idea not to overuse horizontal rules.

2.5 Figures

Like tables, figures cannot be split across pages; the best placement for them is typically the top or the bottom of the page nearest their initial cite. To ensure this proper “floating” placement of figures, use the environment **figure** to enclose the figure and its caption.

This sample document contains examples of .eps files to be displayable with L^AT_EX. If you work with pdfL^AT_EX, use files in the .pdf format. Note that most modern T_EX systems will convert .eps to .pdf for you on the fly. More details on each of these are found in the *Author's Guide*.

[Figure 1 about here.]

[Figure 2 about here.]

As was the case with tables, you may want a figure that spans two columns. To do this, and still to ensure proper “floating” placement of tables, use the environment **figure*** to enclose the figure and its caption. And don't forget to end the environment with **figure***, not **figure**!

[Figure 3 about here.]

[Figure 4 about here.]

2.6 Theorem-like Constructs

Other common constructs that may occur in your article are the forms for logical constructs like theorems, axioms, corollaries and proofs. ACM uses two types of these constructs: theorem-like and definition-like.

Here is a theorem:

THEOREM 2.1. *Let f be continuous on $[a, b]$. If G is an antiderivative for f on $[a, b]$, then*

$$\int_a^b f(t) dt = G(b) - G(a).$$

Here is a definition:

Definition 2.2. If z is irrational, then by e^z we mean the unique number that has logarithm z :

$$\log e^z = z.$$

The pre-defined theorem-like constructs are **theorem**, **conjecture**, **proposition**, **lemma** and **corollary**. The pre-defined definition-like constructs are **example** and **definition**. You can add your own constructs using the *amsthm* interface [3]. The styles used in the \theoremstyle command are **acmplain** and **acmdefinition**.

Another construct is **proof**, for example,

PROOF. Suppose on the contrary there exists a real number L such that

$$\lim_{x \rightarrow \infty} \frac{f(x)}{g(x)} = L.$$

Then

$$l = \lim_{x \rightarrow c} f(x) = \lim_{x \rightarrow c} \left[gx \cdot \frac{f(x)}{g(x)} \right] = \lim_{x \rightarrow c} g(x) \cdot \lim_{x \rightarrow c} \frac{f(x)}{g(x)} = 0 \cdot L = 0,$$

which contradicts our assumption that $l \neq 0$. \square

3 CONCLUSIONS

This paragraph will end the body of this sample document. Remember that you might still have Acknowledgments or Appendices; brief samples of these follow. There is still the Bibliography to deal with; and we will make a disclaimer about that here: with the exception of the reference to the \LaTeX book, the citations in this paper are to articles which have nothing to do with the present subject and are used as examples only.

A HEADINGS IN APPENDICES

The rules about hierarchical headings discussed above for the body of the article are different in the appendices. In the **appendix** environment, the command **section** is used to indicate the start of each Appendix, with alphabetic order designation (i.e., the first is A, the second B, etc.) and a title (if you include one). So, if you need hierarchical structure *within* an Appendix, start with **subsection** as the highest level. Here is an outline of the body of this document in Appendix-appropriate form:

A.1 Introduction

A.2 The Body of the Paper

A.2.1 *Type Changes and Special Characters.*

A.2.2 *Math Equations.*

Inline (In-text) Equations.

Display Equations.

A.2.3 *Citations.*

A.2.4 *Tables.*

A.2.5 *Figures.*

A.2.6 *Theorem-like Constructs.*

A Caveat for the \TeX Expert.

A.3 Conclusions

A.4 References

Generated by bibtex from your .bib file. Run latex, then bibtex, then latex twice (to resolve references) to create the .bbl file. Insert that .bbl file into the .tex source file and comment out the command `\thebibliography`.

B MORE HELP FOR THE HARDY

Of course, reading the source code is always useful. The file `acmart.pdf` contains both the user guide and the commented code.

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REFERENCES

- [1] Rafal Ablamowicz and Bertfried Fauser. 2007. CLIFFORD: a Maple 11 Package for Clifford Algebra Computations, version 11. (2007). Retrieved February 28, 2008 from <http://math.tntech.edu/rafal/cliff11/index.html>
- [2] Patricia S. Abril and Robert Plant. 2007. The patent holder's dilemma: Buy, sell, or troll? *Commun. ACM* 50, 1 (Jan. 2007), 36–44. <https://doi.org/10.1145/1188913>.
- [3] American Mathematical Society. 2015. *Using the amsthm Package*. American Mathematical Society. <http://www.ctan.org/pkg/amsthm>
- [4] Sten Andler. 1979. Predicate Path expressions. In *Proceedings of the 6th. ACM SIGACT-SIGPLAN symposium on Principles of Programming Languages (POPL '79)*. ACM Press, New York, NY, 226–236. <https://doi.org/10.1145/567752.567774>
- [5] David A. Anisi. 2003. *Optimal Motion Control of a Ground Vehicle*. Master's thesis. Royal Institute of Technology (KTH), Stockholm, Sweden.
- [6] Mic Bowman, Saumya K. Debray, and Larry L. Peterson. 1993. Reasoning About Naming Systems. *ACM Trans. Program. Lang. Syst.* 15, 5 (November 1993), 795–825. <https://doi.org/10.1145/161468.161471>
- [7] Johannes Braams. 1991. Babel, a Multilingual Style-Option System for Use with LaTeX's Standard Document Styles. *TUGboat* 12, 2 (June 1991), 291–301.
- [8] Malcolm Clark. 1991. Post Congress Tristesse. In *TeX90 Conference Proceedings*. TeX Users Group, 84–89.
- [9] Kenneth L. Clarkson. 1985. *Algorithms for Closest-Point Problems (Computational Geometry)*. Ph.D. Dissertation. Stanford University, Palo Alto, CA. UMI Order Number: AAT 8506171.
- [10] Jacques Cohen (Ed.). 1996. Special issue: Digital Libraries. *Commun. ACM* 39, 11 (Nov. 1996).
- [11] Sarah Cohen, Werner Nutt, and Yehoshua Sagie. 2007. Deciding equivalences among conjunctive aggregate queries. *J. ACM* 54, 2, Article 5 (April 2007), 50 pages. <https://doi.org/10.1145/1219092.1219093>
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- [14] Ian Editor (Ed.). 2008. *The title of book two* (2nd. ed.). University of Chicago Press, Chicago, Chapter 100. <https://doi.org/10.1007/3-540-09237-4>
- [15] Simon Fear. 2005. *Publication quality tables in \LaTeX* . <http://www.ctan.org/pkg/booktabs>
- [16] Matthew Van Gundy, Davide Balzarotti, and Giovanni Vigna. 2007. Catch me, if you can: Evading network signatures with web-based polymorphic worms. In *Proceedings of the first USENIX workshop on Offensive Technologies (WOOT '07)*. USENIX Association, Berkeley, CA, Article 7, 9 pages.
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- [18] David Harel. 1979. *First-Order Dynamic Logic*. Lecture Notes in Computer Science, Vol. 68. Springer-Verlag, New York, NY. <https://doi.org/10.1007/3-540-09237-4>
- [19] Maurice Herlihy. 1993. A Methodology for Implementing Highly Concurrent Data Objects. *ACM Trans. Program. Lang. Syst.* 15, 5 (November 1993), 745–770. <https://doi.org/10.1145/161468.161469>
- [20] Lars Hörmander. 1985. *The analysis of linear partial differential operators. III*. Grundlehren der Mathematischen Wissenschaften [Fundamental Principles of Mathematical Sciences], Vol. 275. Springer-Verlag, Berlin, Germany. viii+525 pages. Pseudodifferential operators.
- [21] Lars Hörmander. 1985. *The analysis of linear partial differential operators. IV*. Grundlehren der Mathematischen Wissenschaften [Fundamental Principles of Mathematical Sciences], Vol. 275. Springer-Verlag, Berlin, Germany. vii+352 pages. Fourier integral operators.
- [22] IEEE. 2004. IEEE TCSC Executive Committee. In *Proceedings of the IEEE International Conference on Web Services (ICWS '04)*. IEEE Computer Society, Washington, DC, USA, 21–22. <https://doi.org/10.1109/ICWS.2004.64>

- [23] Markus Kirschmer and John Voight. 2010. Algorithmic Enumeration of Ideal Classes for Quaternion Orders. *SLAM J. Comput.* 39, 5 (Jan. 2010), 1714–1747. <https://doi.org/10.1137/080734467>
- [24] Donald E. Knuth. 1997. *The Art of Computer Programming, Vol. 1: Fundamental Algorithms (3rd. ed.)*. Addison Wesley Longman Publishing Co., Inc.
- [25] David Kosiur. 2001. *Understanding Policy-Based Networking* (2nd. ed.). Wiley, New York, NY.
- [26] Leslie Lamport. 1986. *LaTeX: A Document Preparation System*. Addison-Wesley, Reading, MA.
- [27] Newton Lee. 2005. Interview with Bill Kinder: January 13, 2005. Video. *Comput. Entertain.* 3, 1, Article 4 (Jan.-March 2005). <https://doi.org/10.1145/1057270.1057278>
- [28] Dave Novak. 2003. Solder man. Video. In *ACM SIGGRAPH 2003 Video Review on Animation theater Program: Part 1 - Vol. 145 (July 27–27, 2003)*. ACM Press, New York, NY, 4. <https://doi.org/99.9999/woot07-S422>
- [29] Barack Obama. 2008. A more perfect union. Video. (5 March 2008). Retrieved March 21, 2008 from <http://video.google.com/videoplay?docid=6528042696351994555>
- [30] Poker-Edge.Com. 2006. Stats and Analysis. (March 2006). Retrieved June 7, 2006 from <http://www.poker-edge.com/stats.php>
- [31] Bernard Rous. 2008. The Enabling of Digital Libraries. *Digital Libraries* 12, 3, Article 5 (July 2008). To appear.
- [32] Mehdi Saeedi, Morteza Saheb Zamani, and Mehdi Sedighi. 2010. A library-based synthesis methodology for reversible logic. *Microelectron. J.* 41, 4 (April 2010), 185–194.
- [33] Mehdi Saeedi, Morteza Saheb Zamani, Mehdi Sedighi, and Zahra Sasanian. 2010. Synthesis of Reversible Circuit Using Cycle-Based Approach. *J. Emerg. Technol. Comput. Syst.* 6, 4 (Dec. 2010).
- [34] S.L. Salas and Einar Hille. 1978. *Calculus: One and Several Variable*. John Wiley and Sons, New York.
- [35] Joseph Scientist. 2009. The fountain of youth. (Aug. 2009). Patent No. 12345, Filed July 1st., 2008, Issued Aug. 9th., 2009.
- [36] Stan W. Smith. 2010. An experiment in bibliographic mark-up: Parsing metadata for XML export. In *Proceedings of the 3rd. annual workshop on Librarians and Computers (LAC '10)*, Reginald N. Smythe and Alexander Noble (Eds.), Vol. 3. Paparazzi Press, Milan Italy, 422–431. <https://doi.org/99.9999/woot07-S422>
- [37] Asad Z. Spector. 1990. Achieving application requirements. In *Distributed Systems* (2nd. ed.), Sape Mullender (Ed.). ACM Press, New York, NY, 19–33. <https://doi.org/10.1145/90417.90738>
- [38] Harry Thornburg. 2001. Introduction to Bayesian Statistics. (March 2001). Retrieved March 2, 2005 from <http://ccrma.stanford.edu/~jos/bayes/bayes.html>
- [39] TUG 2017. Institutional members of the TeX Users Group. (2017). Retrieved May 27, 2017 from <http://wwtug.org/instm.html>
- [40] Boris Veytsman. [n. d.]. acmart—Class for typesetting publications of ACM. ([n. d.]). Retrieved May 27, 2017 from <http://www.ctan.org/pkg/acmart>

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Figure 1: A sample black and white graphic.



Figure 2: A sample black and white graphic that has been resized with the `includegraphics` command.

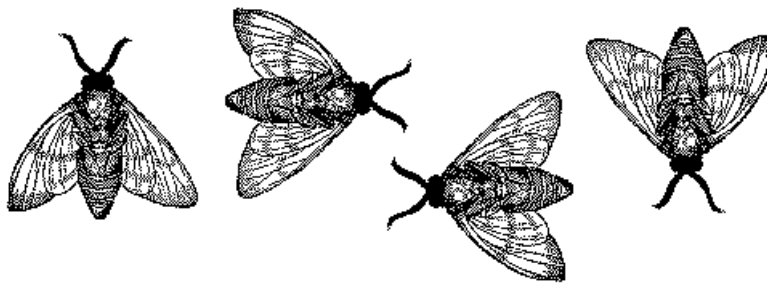


Figure 3: A sample black and white graphic that needs to span two columns of text.

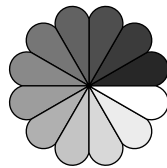


Figure 4: A sample black and white graphic that has been resized with the `includegraphics` command.

LIST OF TABLES

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Table 1: Frequency of Special Characters

Non-English or Math	Frequency	Comments
\emptyset	1 in 1,000	For Swedish names
π	1 in 5	Common in math
\$	4 in 5	Used in business
Ψ_1^2	1 in 40,000	Unexplained usage

Table 2: Some Typical Commands

Command	A Number	Comments
<code>\author</code>	100	Author
<code>\table</code>	300	For tables
<code>\table*</code>	400	For wider tables

Big Data Analytics and High Performance Computing

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ABSTRACT

This paper showcases the effects of Big Data on High Performance Computing and tries to find how they are related to each other.

KEYWORDS

ACM proceedings, \LaTeX , text tagging

1 INTRODUCTION

This is an intro [1]

2 THE BODY OF THE PAPER

3 CONCLUSIONS

This paragraph will end the body of this sample document. Remember that you might still have Acknowledgments or Appendices; brief samples of these follow. There is still the Bibliography to deal with; and we will make a disclaimer about that here: with the exception of the reference to the \LaTeX book, the citations in this paper are to articles which have nothing to do with the present subject and are used as examples only.

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The authors would also like to thank the anonymous referees for their valuable comments and helpful suggestions. The work is supported by the National Natural Science Foundation of China under Grant No.: 61273304 and Young Scientists' Support Program (<http://www.nnsf.cn/youngscientists>).

REFERENCES

- [1] www.google.com. 2017. qwe. In *qwdqw*. IEEE, Wuhan, China, 551–553. <https://doi.org/10.1109/ICIS.2017.7960053> HID: 233, Accessed: 2017-09-20.

My great Big Dat Paper

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ABSTRACT

This paper provides a sample of a \LaTeX document which conforms, somewhat loosely, to the formatting guidelines for ACM SIG Proceedings.

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A.1 Introduction

A.2 The Body of the Paper

A.2.1 *Type Changes and Special Characters.*

A.2.2 *Math Equations.*

Inline (In-text) Equations.

Display Equations.

A.2.3 *Citations.*

A.2.4 *Tables.*

A.2.5 *Figures.*

A.2.6 *Theorem-like Constructs.*

A Caveat for the \TeX Expert.

A.3 Conclusions

A.4 References

Generated by bibtex from your .bib file. Run latex, then bibtex, then latex twice (to resolve references) to create the .bbl file. Insert that .bbl file into the .tex source file and comment out the command `\thebibliography`.

B MORE HELP FOR THE HARDY

Of course, reading the source code is always useful. The file `acmart.pdf` contains both the user guide and the commented code.

ACKNOWLEDGMENTS

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Big Data and Deep Learning

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ABSTRACT

This paper provides a sample of a \LaTeX document which conforms, somewhat loosely, to the formatting guidelines for ACM SIG Proceedings.

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The *proceedings* are the records of a conference. ACM seeks to give these conference by-products a uniform, high-quality appearance. To do this, ACM has some rigid requirements for the format of the proceedings documents: there is a specified format (balanced double columns), a specified set of fonts (Arial or Helvetica and Times Roman) in certain specified sizes, a specified live area, centered on the page, specified size of margins, specified column width and gutter size.

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Big Data Application in Web Search and Text Mining

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ABSTRACT

This paper studies data analytic steps in web search, and analyze some of popular approaches & algorithms (e.g. Hubs, PageRank, etc) within big data and their application in web search aspect.

KEYWORDS

web search, text mining, PageRank

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ACKNOWLEDGMENTS

The authors would like to thank

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- [1] Ian Editor (Ed.). 2007. *The title of book one* (1st. ed.). The name of the series one, Vol. 9. University of Chicago Press, Chicago. <https://doi.org/10.1007/3-540-09237-4>

Automated Information Extraction in Electronic Health Records

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ABSTRACT

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ACKNOWLEDGMENTS

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REFERENCES

- [1] David Kosiur. 2001. *Understanding Policy-Based Networking* (2nd. ed.). Wiley, New York, NY.

Distributed Environment For Parallel Neural Networks

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This paper provides a sample of a \LaTeX document which conforms, somewhat loosely, to the formatting guidelines for ACM SIG Proceedings.

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Big Data Analysis using MapReduce

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ABSTRACT

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My great Big Dat Paper

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ACKNOWLEDGMENTS

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Big Data and Artificial Neural Networks

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ABSTRACT

This is my abstract.

KEYWORDS

ACM proceedings, \LaTeX , text tagging

1 INTRODUCTION

This is my Introduction

2 CONCLUSIONS

This is my Conclusion

ACKNOWLEDGMENTS

The authors would like to thank Dr. Gregor von Laszewski for all the help he has provided for this paper.

Big Data Analytics in Sports - Track and Field

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ABSTRACT

This paper covers the impact that Big Data has and could have on the sport of track and field.

KEYWORDS

i523

1 INTRODUCTION

This is my introduction

2 THE BODY OF THE PAPER

This is the body of my paper

3 CONCLUSIONS

This is my conclusion

ACKNOWLEDGMENTS

Acknowledgments

Big Data's influence on ecommerce and lifestyle

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ABSTRACT

This paper studies how big data is applied in ecommerce and its influence on lifestyle.

KEYWORDS

big data, ecommerce

1 INTRODUCTION

This is my introduction

1.1 Citations

Citations to articles [?]

ACKNOWLEDGMENTS

The authors would like to thank Dr. Yuhua Li for providing the matlab code of the *BEPS* method.

REFERENCES

Big Data Analytic Architecture for Real Time Traffic Control

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ABSTRACT

This paper provides a sample of a \LaTeX document which conforms, somewhat loosely, to the formatting guidelines for ACM SIG Proceedings.

KEYWORDS

ACM proceedings, \LaTeX , text tagging

1 INTRODUCTION

This is a introduction.

2 THE BODY OF THE PAPER

Typically, the body of a paper is organized into a hierarchical structure, with numbered or unnumbered headings for sections, subsections, sub-subsections, and even smaller sections. The command `\section` that precedes this paragraph is part of such a hierarchy. \LaTeX handles the numbering and placement of these headings for you, when you use the appropriate heading commands around the titles of the headings. If you want a sub-subsection or smaller part to be unnumbered in your output, simply append an asterisk to the command name. Examples of both numbered and unnumbered headings will appear throughout the balance of this sample document.

Because the entire article is contained in the **document** environment, you can indicate the start of a new paragraph with a blank line in your input file; that is why this sentence forms a separate paragraph.

2.1 Type Changes and *Special* Characters

We have already seen several typeface changes in this sample. You can indicate italicized words or phrases in your text with the command `\textit`; emboldening with the command `\textbf` and typewriter-style (for instance, for computer code) with `\texttt`. But remember, you do not have to indicate typestyle changes when such changes are part of the *structural* elements of your article; for instance, the heading of this subsection will be in a sans serif¹ typeface, but that is handled by the document class file. Take care with the use of the curly braces in typeface changes; they mark the beginning and end of the text that is to be in the different typeface.

You can use whatever symbols, accented characters, or non-English characters you need anywhere in your document; you can find a complete list of what is available in the *\LaTeX User's Guide* [26].

¹Another footnote here. Let's make this a rather long one to see how it looks. Footnotes must be avoided.

2.2 Math Equations

You may want to display math equations in three distinct styles: inline, numbered or non-numbered display. Each of the three are discussed in the next sections.

2.2.1 Inline (In-text) Equations. A formula that appears in the running text is called an inline or in-text formula. It is produced by the **math** environment, which can be invoked with the usual `\begin . . . \end` construction or with the short form `$. . . $`. You can use any of the symbols and structures, from α to ω , available in \LaTeX [26]; this section will simply show a few examples of in-text equations in context. Notice how this equation:

$$\lim_{n \rightarrow \infty} x = 0,$$

set here in in-line math style, looks slightly different when set in display style. (See next section).

2.2.2 Display Equations. A numbered display equation—one set off by vertical space from the text and centered horizontally—is produced by the **equation** environment. An unnumbered display equation is produced by the **displaymath** environment.

Again, in either environment, you can use any of the symbols and structures available in \LaTeX ; this section will just give a couple of examples of display equations in context. First, consider the equation, shown as an inline equation above:

$$\lim_{n \rightarrow \infty} x = 0 \tag{1}$$

Notice how it is formatted somewhat differently in the **displaymath** environment. Now, we'll enter an unnumbered equation:

$$\sum_{i=0}^{\infty} x + 1$$

and follow it with another numbered equation:

$$\sum_{i=0}^{\infty} x_i = \int_0^{\pi+2} f \tag{2}$$

just to demonstrate \LaTeX 's able handling of numbering.

2.3 Citations

Citations to articles [6–8, 19], conference proceedings [8] or maybe books [26, 34] listed in the Bibliography section of your article will occur throughout the text of your article. You should use BibTeX to automatically produce this bibliography; you simply need to insert one of several citation commands with a key of the item cited in the proper location in the `.tex` file [26]. The key is a short reference you invent to uniquely identify each work; in this sample document, the key is the first author's surname and a word from the title. This identifying key is included with each item in the `.bib` file for your article.

The details of the construction of the .bib file are beyond the scope of this sample document, but more information can be found in the *Author's Guide*, and exhaustive details in the *L^AT_EX User's Guide* by L^Ampport [26].

This article shows only the plainest form of the citation command, using \cite.

Some examples. A paginated journal article [2], an enumerated journal article [11], a reference to an entire issue [10], a monograph (whole book) [25], a monograph/whole book in a series (see 2a in spec. document) [18], a divisible-book such as an anthology or compilation [13] followed by the same example, however we only output the series if the volume number is given [14] (so Editor00a's series should NOT be present since it has no vol. no.), a chapter in a divisible book [37], a chapter in a divisible book in a series [12], a multi-volume work as book [24], an article in a proceedings (of a conference, symposium, workshop for example) (paginated proceedings article) [4], a proceedings article with all possible elements [36], an example of an enumerated proceedings article [16], an informally published work [17], a doctoral dissertation [9], a master's thesis: [5], an online document / world wide web resource [1, 30, 38], a video game (Case 1) [29] and (Case 2) [28] and [27] and (Case 3) a patent [35], work accepted for publication [31], 'YYYYb'-test for prolific author [32] and [33]. Other cites might contain 'duplicate' DOI and URLs (some SIAM articles) [23]. Boris / Barbara Beeton: multi-volume works as books [21] and [20].

A couple of citations with DOIs: [22, 23].

Online citations: [38–40].

We use jabref to manage all citations. A paper without managing a bib file will be returned without review. in the bibtex file all urls are added to rfernces with the url filed. They are not to be included in the *howpublished* or *note* field.

2.4 Tables

Because tables cannot be split across pages, the best placement for them is typically the top of the page nearest their initial cite. To ensure this proper “floating” placement of tables, use the environment **table** to enclose the table's contents and the table caption. The contents of the table itself must go in the **tabular** environment, to be aligned properly in rows and columns, with the desired horizontal and vertical rules. Again, detailed instructions on **tabular** material are found in the *L^AT_EX User's Guide*.

Immediately following this sentence is the point at which Table 1 is included in the input file; compare the placement of the table here with the table in the printed output of this document.

[Table 1 about here.]

To set a wider table, which takes up the whole width of the page's live area, use the environment **table*** to enclose the table's contents and the table caption. As with a single-column table, this wide table will “float” to a location deemed more desirable. Immediately following this sentence is the point at which Table 2 is included in the input file; again, it is instructive to compare the placement of the table here with the table in the printed output of this document.

[Table 2 about here.]

It is strongly recommended to use the package booktabs [15] and follow its main principles of typography with respect to tables:

- (1) Never, ever use vertical rules.
- (2) Never use double rules.

It is also a good idea not to overuse horizontal rules.

2.5 Figures

Like tables, figures cannot be split across pages; the best placement for them is typically the top or the bottom of the page nearest their initial cite. To ensure this proper “floating” placement of figures, use the environment **figure** to enclose the figure and its caption.

This sample document contains examples of .eps files to be displayable with L^AT_EX. If you work with pdfL^AT_EX, use files in the .pdf format. Note that most modern T_EX systems will convert .eps to .pdf for you on the fly. More details on each of these are found in the *Author's Guide*.

As was the case with tables, you may want a figure that spans two columns. To do this, and still to ensure proper “floating” placement of tables, use the environment **figure*** to enclose the figure and its caption. And don't forget to end the environment with **figure***, not **figure**!

2.6 Theorem-like Constructs

Other common constructs that may occur in your article are the forms for logical constructs like theorems, axioms, corollaries and proofs. ACM uses two types of these constructs: theorem-like and definition-like.

Here is a theorem:

THEOREM 2.1. *Let f be continuous on $[a, b]$. If G is an antiderivative for f on $[a, b]$, then*

$$\int_a^b f(t) dt = G(b) - G(a).$$

Here is a definition:

Definition 2.2. If z is irrational, then by e^z we mean the unique number that has logarithm z :

$$\log e^z = z.$$

The pre-defined theorem-like constructs are **theorem**, **conjecture**, **proposition**, **lemma** and **corollary**. The pre-defined definition-like constructs are **example** and **definition**. You can add your own constructs using the *amsthm* interface [3]. The styles used in the \theoremstyle command are **acmplain** and **acmdefinition**.

Another construct is **proof**, for example,

PROOF. Suppose on the contrary there exists a real number L such that

$$\lim_{x \rightarrow \infty} \frac{f(x)}{g(x)} = L.$$

Then

$$l = \lim_{x \rightarrow c} f(x) = \lim_{x \rightarrow c} \left[gx \cdot \frac{f(x)}{g(x)} \right] = \lim_{x \rightarrow c} g(x) \cdot \lim_{x \rightarrow c} \frac{f(x)}{g(x)} = 0 \cdot L = 0,$$

which contradicts our assumption that $l \neq 0$. □

3 CONCLUSIONS

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ACKNOWLEDGMENTS

The authors would like to thank Dr. Yuhua Li for providing the matlab code of the BEPS method.

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REFERENCES

- [1] Rafal Ablamowicz and Bertfried Fauser. 2007. CLIFFORD: a Maple 11 Package for Clifford Algebra Computations, version 11. (2007). Retrieved February 28, 2008 from <http://math.tntech.edu/rafal/cliff11/index.html>
- [2] Patricia S. Abril and Robert Plant. 2007. The patent holder's dilemma: Buy, sell, or troll? *Commun. ACM* 50, 1 (Jan. 2007), 36–44. <https://doi.org/10.1145/1188913.1188915>
- [3] American Mathematical Society. 2015. *Using the amsthm Package*. American Mathematical Society. <http://www.ctan.org/pkg/amsthm>
- [4] Sten Andler. 1979. Predicate Path expressions. In *Proceedings of the 6th. ACM SIGACT-SIGPLAN symposium on Principles of Programming Languages (POPL '79)*. ACM Press, New York, NY, 226–236. <https://doi.org/10.1145/567752.567774>
- [5] David A. Anisi. 2003. *Optimal Motion Control of a Ground Vehicle*. Master's thesis. Royal Institute of Technology (KTH), Stockholm, Sweden.
- [6] Mic Bowman, Saumya K. Debray, and Larry L. Peterson. 1993. Reasoning About Naming Systems. *ACM Trans. Program. Lang. Syst.* 15, 5 (November 1993), 795–825. <https://doi.org/10.1145/161468.161471>
- [7] Johannes Braams. 1991. Babel, a Multilingual Style-Option System for Use with LaTeX's Standard Document Styles. *TUGboat* 12, 2 (June 1991), 291–301.
- [8] Malcolm Clark. 1991. Post Congress Tristesse. In *TeX90 Conference Proceedings*. TeX Users Group, 84–89.
- [9] Kenneth L. Clarkson. 1985. *Algorithms for Closest-Point Problems (Computational Geometry)*. Ph.D. Dissertation. Stanford University, Palo Alto, CA. UMI Order Number: AAT 8506171.
- [10] Jacques Cohen (Ed.). 1996. Special issue: Digital Libraries. *Commun. ACM* 39, 11 (Nov. 1996).
- [11] Sarah Cohen, Werner Nutt, and Yehoshua Sagie. 2007. Deciding equivalences among conjunctive aggregate queries. *J. ACM* 54, 2, Article 5 (April 2007), 50 pages. <https://doi.org/10.1145/1219092.1219093>
- [12] Bruce P. Douglass, David Harel, and Mark B. Trakhtenbrot. 1998. Statecarts in use: structured analysis and object-orientation. In *Lectures on Embedded Systems*, Grzegorz Rozenberg and Frits W. Vaandrager (Eds.). Lecture Notes in Computer Science, Vol. 1494. Springer-Verlag, London, 368–394. https://doi.org/10.1007/3-540-65193-4_29
- [13] Ian Editor (Ed.). 2007. *The title of book one* (1st. ed.). The name of the series one, Vol. 9. University of Chicago Press, Chicago. <https://doi.org/10.1007/3-540-09237-4>
- [14] Ian Editor (Ed.). 2008. *The title of book two* (2nd. ed.). University of Chicago Press, Chicago, Chapter 100. <https://doi.org/10.1007/3-540-09237-4>
- [15] Simon Fear. 2005. *Publication quality tables in L^AT_EX*. <http://www.ctan.org/pkg/booktabs>
- [16] Matthew Van Gundy, Davide Balzarotti, and Giovanni Vigna. 2007. Catch me, if you can: Evading network signatures with web-based polymorphic worms. In *Proceedings of the first USENIX workshop on Offensive Technologies (WOOT '07)*. USENIX Association, Berkeley, CA, Article 7, 9 pages.
- [17] David Harel. 1978. *LOGICS of Programs: AXIOMATICS and DESCRIPTIVE POWER*. MIT Research Lab Technical Report TR-200. Massachusetts Institute of Technology, Cambridge, MA.
- [18] David Harel. 1979. *First-Order Dynamic Logic*. Lecture Notes in Computer Science, Vol. 68. Springer-Verlag, New York, NY. <https://doi.org/10.1007/3-540-09237-4>
- [19] Maurice Herlihy. 1993. A Methodology for Implementing Highly Concurrent Data Objects. *ACM Trans. Program. Lang. Syst.* 15, 5 (November 1993), 745–770. <https://doi.org/10.1145/161468.161469>
- [20] Lars Hörmander. 1985. *The analysis of linear partial differential operators. III*. Grundlehren der Mathematischen Wissenschaften [Fundamental Principles of Mathematical Sciences], Vol. 275. Springer-Verlag, Berlin, Germany. viii+525 pages. Pseudodifferential operators.
- [21] Lars Hörmander. 1985. *The analysis of linear partial differential operators. IV*. Grundlehren der Mathematischen Wissenschaften [Fundamental Principles of Mathematical Sciences], Vol. 275. Springer-Verlag, Berlin, Germany. vii+352 pages. Fourier integral operators.
- [22] IEEE. 2004. IEEE TCSC Executive Committee. In *Proceedings of the IEEE International Conference on Web Services (ICWS '04)*. IEEE Computer Society, Washington, DC, USA, 21–22. <https://doi.org/10.1109/ICWS.2004.64>
- [23] Markus Kirschmer and John Voight. 2010. Algorithmic Enumeration of Ideal Classes for Quaternion Orders. *SIAM J. Comput.* 39, 5 (Jan. 2010), 1714–1747. <https://doi.org/10.1137/080734467>
- [24] Donald E. Knuth. 1997. *The Art of Computer Programming, Vol. 1: Fundamental Algorithms (3rd. ed.)*. Addison Wesley Longman Publishing Co., Inc.
- [25] David Kosior. 2001. *Understanding Policy-Based Networking* (2nd. ed.). Wiley, New York, NY.
- [26] Leslie Lamport. 1986. *L^AT_EX: A Document Preparation System*. Addison-Wesley, Reading, MA.
- [27] Newton Lee. 2005. Interview with Bill Kinder: January 13, 2005. Video. *Comput. Entertain.* 3, 1, Article 4 (Jan.-March 2005). <https://doi.org/10.1145/1057270.1057278>

- [28] Dave Novak. 2003. Solder man. Video. In *ACM SIGGRAPH 2003 Video Review on Animation theater Program: Part I - Vol. 145 (July 27–27, 2003)*. ACM Press, New York, NY, 4. <https://doi.org/99.9999/woot07-S422>
- [29] Barack Obama. 2008. A more perfect union. Video. (5 March 2008). Retrieved March 21, 2008 from <http://video.google.com/videoplay?docid=6528042696351994555>
- [30] Poker-Edge.Com. 2006. Stats and Analysis. (March 2006). Retrieved June 7, 2006 from <http://www.poker-edge.com/stats.php>
- [31] Bernard Rous. 2008. The Enabling of Digital Libraries. *Digital Libraries* 12, 3, Article 5 (July 2008). To appear.
- [32] Mehdi Saeedi, Morteza Saheb Zamani, and Mehdi Sedighi. 2010. A library-based synthesis methodology for reversible logic. *Microelectron. J.* 41, 4 (April 2010), 185–194.
- [33] Mehdi Saeedi, Morteza Saheb Zamani, Mehdi Sedighi, and Zahra Sasanian. 2010. Synthesis of Reversible Circuit Using Cycle-Based Approach. *J. Emerg. Technol. Comput. Syst.* 6, 4 (Dec. 2010).
- [34] S.L. Salas and Einar Hille. 1978. *Calculus: One and Several Variable*. John Wiley and Sons, New York.
- [35] Joseph Scientist. 2009. The fountain of youth. (Aug. 2009). Patent No. 12345, Filed July 1st., 2008, Issued Aug. 9th., 2009.
- [36] Stan W. Smith. 2010. An experiment in bibliographic mark-up: Parsing metadata for XML export. In *Proceedings of the 3rd. annual workshop on Librarians and Computers (LAC '10)*, Reginald N. Smythe and Alexander Noble (Eds.), Vol. 3. Paparazzi Press, Milan Italy, 422–431. <https://doi.org/99.9999/woot07-S422>
- [37] Asad Z. Spector. 1990. Achieving application requirements. In *Distributed Systems* (2nd. ed.), Sape Mullender (Ed.). ACM Press, New York, NY, 19–33. <https://doi.org/10.1145/90417.90738>
- [38] Harry Thornburg. 2001. Introduction to Bayesian Statistics. (March 2001). Retrieved March 2, 2005 from <http://ccrma.stanford.edu/~jos/bayes/bayes.html>
- [39] TUG 2017. Institutional members of the TeX Users Group. (2017). Retrieved May 27, 2017 from <http://wwtug.org/instmemb.html>
- [40] Boris Veytsman. [n. d.]. acmart—Class for typesetting publications of ACM. ([n. d.]). Retrieved May 27, 2017 from <http://www.ctan.org/pkg/acmart>

LIST OF TABLES

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Table 1: Frequency of Special Characters

Non-English or Math	Frequency	Comments
\emptyset	1 in 1,000	For Swedish names
π	1 in 5	Common in math
\$	4 in 5	Used in business
Ψ_1^2	1 in 40,000	Unexplained usage

Table 2: Some Typical Commands

Command	A Number	Comments
<code>\author</code>	100	Author
<code>\table</code>	300	For tables
<code>\table*</code>	400	For wider tables

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ABSTRACT

This paper provides a sample of a \LaTeX document which conforms, somewhat loosely, to the formatting guidelines for ACM SIG Proceedings.

KEYWORDS

ACM proceedings, \LaTeX , text tagging

1 INTRODUCTION

The *proceedings* are the records of a conference. ACM seeks to give these conference by-products a uniform, high-quality appearance. To do this, ACM has some rigid requirements for the format of the proceedings documents: there is a specified format (balanced double columns), a specified set of fonts (Arial or Helvetica and Times Roman) in certain specified sizes, a specified live area, centered on the page, specified size of margins, specified column width and gutter size.

2 THE BODY OF THE PAPER

Typically, the body of a paper is organized into a hierarchical structure, with numbered or unnumbered headings for sections, subsections, sub-subsections, and even smaller sections. The command `\section` that precedes this paragraph is part of such a hierarchy. \LaTeX handles the numbering and placement of these headings for you, when you use the appropriate heading commands around the titles of the headings. If you want a sub-subsection or smaller part to be unnumbered in your output, simply append an asterisk to the command name. Examples of both numbered and unnumbered headings will appear throughout the balance of this sample document.

Because the entire article is contained in the `document` environment, you can indicate the start of a new paragraph with a blank line in your input file; that is why this sentence forms a separate paragraph.

2.1 Type Changes and *Special* Characters

We have already seen several typeface changes in this sample. You can indicate italicized words or phrases in your text with the command `\textit`; emboldening with the command `\textbf` and typewriter-style (for instance, for computer code) with `\texttt`. But remember, you do not have to indicate typestyle changes when such changes are part of the *structural* elements of your article; for instance, the heading of this subsection will be in a sans serif¹ typeface, but that is handled by the document class file. Take care with the use of the curly braces in typeface changes; they mark the beginning and end of the text that is to be in the different typeface.

You can use whatever symbols, accented characters, or non-English characters you need anywhere in your document; you can find a complete list of what is available in the *\LaTeX User's Guide* [26].

2.2 Math Equations

You may want to display math equations in three distinct styles: inline, numbered or non-numbered display. Each of the three are discussed in the next sections.

2.2.1 Inline (In-text) Equations. A formula that appears in the running text is called an inline or in-text formula. It is produced by the `math` environment, which can be invoked with the usual `\begin . . . \end` construction or with the short form `$. . . $`. You can use any of the symbols and structures, from α to ω , available in \LaTeX [26]; this section will simply show a few examples of in-text equations in context. Notice how this equation:

$$\lim_{n \rightarrow \infty} x = 0,$$

set here in in-line math style, looks slightly different when set in display style. (See next section).

2.2.2 Display Equations. A numbered display equation—one set off by vertical space from the text and centered horizontally—is

¹ Another footnote here. Let's make this a rather long one to see how it looks. Footnotes must be avoided.

produced by the **equation** environment. An unnumbered display equation is produced by the **displaymath** environment.

Again, in either environment, you can use any of the symbols and structures available in \LaTeX ; this section will just give a couple of examples of display equations in context. First, consider the equation, shown as an inline equation above:

$$\lim_{n \rightarrow \infty} x = 0 \quad (1)$$

Notice how it is formatted somewhat differently in the **displaymath** environment. Now, we'll enter an unnumbered equation:

$$\sum_{i=0}^{\infty} x + 1$$

and follow it with another numbered equation:

$$\sum_{i=0}^{\infty} x_i = \int_0^{\pi+2} f \quad (2)$$

just to demonstrate \LaTeX 's able handling of numbering.

2.3 Citations

Citations to articles [6–8, 19], conference proceedings [8] or maybe books [26, 34] listed in the Bibliography section of your article will occur throughout the text of your article. You should use BibTeX to automatically produce this bibliography; you simply need to insert one of several citation commands with a key of the item cited in the proper location in the .tex file [26]. The key is a short reference you invent to uniquely identify each work; in this sample document, the key is the first author's surname and a word from the title. This identifying key is included with each item in the .bib file for your article.

The details of the construction of the .bib file are beyond the scope of this sample document, but more information can be found in the *Author's Guide*, and exhaustive details in the *\LaTeX User's Guide* by Lamport [26].

This article shows only the plainest form of the citation command, using `\cite`.

Some examples. A paginated journal article [2], an enumerated journal article [11], a reference to an entire issue [10], a monograph (whole book) [25], a monograph/whole book in a series (see 2a in spec. document) [18], a divisible-book such as an anthology or compilation [13] followed by the same example, however we only output the series if the volume number is given [14] (so Editor00a's series should NOT be present since it has no vol. no.), a chapter in a divisible book [37], a chapter in a divisible book in a series [12], a multi-volume work as book [24], an article in a proceedings (of a conference, symposium, workshop for example) (paginated proceedings article) [4], a proceedings article with all possible elements [36], an example of an enumerated proceedings article [16], an informally published work [17], a doctoral dissertation [9], a master's thesis: [5], an online document / world wide web resource [1, 30, 38], a video game (Case 1) [29] and (Case 2) [28] and [27] and (Case 3) a patent [35], work accepted for publication [31], 'YYYYb'-test for prolific author [32] and [33]. Other cites might contain 'duplicate' DOI and URLs (some SIAM articles) [23]. Boris / Barbara Beeton: multi-volume works as books [21] and [20].

A couple of citations with DOIs: [22, 23].

Online citations: [38–40].

We use `\jabref` to manage all citations. A paper without managing a bib file will be returned without review. in the bibtex file all urls are added to `rfernces` with the `url` filed. They are not to be included in the *howpublished* or *note* field.

2.4 Tables

Because tables cannot be split across pages, the best placement for them is typically the top of the page nearest their initial cite. To ensure this proper "floating" placement of tables, use the environment **table** to enclose the table's contents and the table caption. The contents of the table itself must go in the **tabular** environment, to be aligned properly in rows and columns, with the desired horizontal and vertical rules. Again, detailed instructions on **tabular** material are found in the *\LaTeX User's Guide*.

Immediately following this sentence is the point at which Table 1 is included in the input file; compare the placement of the table here with the table in the printed output of this document.

[Table 1 about here.]

To set a wider table, which takes up the whole width of the page's live area, use the environment **table*** to enclose the table's contents and the table caption. As with a single-column table, this wide table will "float" to a location deemed more desirable. Immediately following this sentence is the point at which Table 2 is included in the input file; again, it is instructive to compare the placement of the table here with the table in the printed output of this document.

[Table 2 about here.]

It is strongly recommended to use the package `booktabs` [15] and follow its main principles of typography with respect to tables:

- (1) Never, ever use vertical rules.
- (2) Never use double rules.

It is also a good idea not to overuse horizontal rules.

2.5 Figures

Like tables, figures cannot be split across pages; the best placement for them is typically the top or the bottom of the page nearest their initial cite. To ensure this proper "floating" placement of figures, use the environment **figure** to enclose the figure and its caption.

This sample document contains examples of .eps files to be displayable with \LaTeX . If you work with `pdf \LaTeX` , use files in the .pdf format. Note that most modern \TeX systems will convert .eps to .pdf for you on the fly. More details on each of these are found in the *Author's Guide*.

[Figure 1 about here.]

[Figure 2 about here.]

As was the case with tables, you may want a figure that spans two columns. To do this, and still to ensure proper "floating" placement of tables, use the environment **figure*** to enclose the figure and its caption. And don't forget to end the environment with **figure***, not **figure**!

[Figure 3 about here.]

[Figure 4 about here.]

2.6 Theorem-like Constructs

Other common constructs that may occur in your article are the forms for logical constructs like theorems, axioms, corollaries and proofs. ACM uses two types of these constructs: theorem-like and definition-like.

Here is a theorem:

THEOREM 2.1. *Let f be continuous on $[a, b]$. If G is an antiderivative for f on $[a, b]$, then*

$$\int_a^b f(t) dt = G(b) - G(a).$$

Here is a definition:

Definition 2.2. If z is irrational, then by e^z we mean the unique number that has logarithm z :

$$\log e^z = z.$$

The pre-defined theorem-like constructs are **theorem**, **conjecture**, **proposition**, **lemma** and **corollary**. The pre-defined definition-like constructs are **example** and **definition**. You can add your own constructs using the *amsthm* interface [3]. The styles used in the `\theoremstyle` command are **acmplain** and **acmdefinition**.

Another construct is **proof**, for example,

PROOF. Suppose on the contrary there exists a real number L such that

$$\lim_{x \rightarrow \infty} \frac{f(x)}{g(x)} = L.$$

Then

$$l = \lim_{x \rightarrow c} f(x) = \lim_{x \rightarrow c} \left[gx \cdot \frac{f(x)}{g(x)} \right] = \lim_{x \rightarrow c} g(x) \cdot \lim_{x \rightarrow c} \frac{f(x)}{g(x)} = 0 \cdot L = 0,$$

which contradicts our assumption that $l \neq 0$. \square

3 CONCLUSIONS

This paragraph will end the body of this sample document. Remember that you might still have Acknowledgments or Appendices; brief samples of these follow. There is still the Bibliography to deal with; and we will make a disclaimer about that here: with the exception of the reference to the \LaTeX book, the citations in this paper are to articles which have nothing to do with the present subject and are used as examples only.

A HEADINGS IN APPENDICES

The rules about hierarchical headings discussed above for the body of the article are different in the appendices. In the **appendix** environment, the command **section** is used to indicate the start of each Appendix, with alphabetic order designation (i.e., the first is A, the second B, etc.) and a title (if you include one). So, if you need hierarchical structure *within* an Appendix, start with **subsection** as the highest level. Here is an outline of the body of this document in Appendix-appropriate form:

A.1 Introduction

A.2 The Body of the Paper

A.2.1 Type Changes and Special Characters.

A.2.2 Math Equations.

Inline (In-text) Equations.

Display Equations.

A.2.3 Citations.

A.2.4 Tables.

A.2.5 Figures.

A.2.6 Theorem-like Constructs.

A Caveat for the \TeX Expert.

A.3 Conclusions

A.4 References

Generated by bibtex from your .bib file. Run latex, then bibtex, then latex twice (to resolve references) to create the .bbl file. Insert that .bbl file into the .tex source file and comment out the command `\thebibliography`.

B MORE HELP FOR THE HARDY

Of course, reading the source code is always useful. The file `acmart.pdf` contains both the user guide and the commented code.

ACKNOWLEDGMENTS

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REFERENCES

- [1] Rafal Ablamowicz and Bertfried Fauser. 2007. CLIFFORD: a Maple 11 Package for Clifford Algebra Computations, version 11. (2007). Retrieved February 28, 2008 from <http://math.tntech.edu/rafal/cliff11/index.html>
- [2] Patricia S. Abril and Robert Plant. 2007. The patent holder's dilemma: Buy, sell, or troll? *Commun. ACM* 50, 1 (Jan. 2007), 36–44. <https://doi.org/10.1145/1188913.1188915>
- [3] American Mathematical Society 2015. *Using the amsthm Package*. American Mathematical Society. <http://www.ctan.org/pkg/amsthm>
- [4] Sten Aandler. 1979. Predicate Path expressions. In *Proceedings of the 6th. ACM SIGACT-SIGPLAN symposium on Principles of Programming Languages (POPL '79)*. ACM Press, New York, NY, 226–236. <https://doi.org/10.1145/567752.567774>
- [5] David A. Anisi. 2003. *Optimal Motion Control of a Ground Vehicle*. Master's thesis. Royal Institute of Technology (KTH), Stockholm, Sweden.
- [6] Mic Bowman, Saumya K. Debray, and Larry L. Peterson. 1993. Reasoning About Naming Systems. *ACM Trans. Program. Lang. Syst.* 15, 5 (November 1993), 795–825. <https://doi.org/10.1145/161468.161471>
- [7] Johannes Braams. 1991. Babel, a Multilingual Style-Option System for Use with \LaTeX 's Standard Document Styles. *TUGboat* 12, 2 (June 1991), 291–301.
- [8] Malcolm Clark. 1991. Post Congress Tristesse. In *TeX90 Conference Proceedings*. TeX Users Group, 84–89.
- [9] Kenneth L. Clarkson. 1985. *Algorithms for Closest-Point Problems (Computational Geometry)*. Ph.D. Dissertation. Stanford University, Palo Alto, CA. UMI Order Number: AAT 8506171.
- [10] Jacques Cohen (Ed.). 1996. Special issue: Digital Libraries. *Commun. ACM* 39, 11 (Nov. 1996).
- [11] Sarah Cohen, Werner Nutt, and Yehoshua Sagie. 2007. Deciding equivalences among conjunctive aggregate queries. *J. ACM* 54, 2, Article 5 (April 2007), 50 pages. <https://doi.org/10.1145/1219092.1219093>
- [12] Bruce P. Douglass, David Harel, and Mark B. Trakhtenbrot. 1998. Statecarts in use: structured analysis and object-orientation. In *Lectures on Embedded Systems*, Grzegorz Rozenberg and Frits W. Vaandrager (Eds.). Lecture Notes in Computer Science, Vol. 1494. Springer-Verlag, London, 368–394. <https://doi.org/10.1007/3-540-65193-4.29>

- [13] Ian Editor (Ed.). 2007. *The title of book one* (1st. ed.). The name of the series one, Vol. 9. University of Chicago Press, Chicago. <https://doi.org/10.1007/3-540-09237-4>
- [14] Ian Editor (Ed.). 2008. *The title of book two* (2nd. ed.). University of Chicago Press, Chicago, Chapter 100. <https://doi.org/10.1007/3-540-09237-4>
- [15] Simon Fear. 2005. *Publication quality tables in L^AT_EX*. <http://www.ctan.org/pkg/booktabs>
- [16] Matthew Van Gundy, Davide Balzarotti, and Giovanni Vigna. 2007. Catch me, if you can: Evading network signatures with web-based polymorphic worms. In *Proceedings of the first USENIX workshop on Offensive Technologies (WOOT '07)*. USENIX Association, Berkley, CA, Article 7, 9 pages.
- [17] David Harel. 1978. *LOGICS of Programs: AXIOMATICS and DESCRIPTIVE POWER*. MIT Research Lab Technical Report TR-200. Massachusetts Institute of Technology, Cambridge, MA.
- [18] David Harel. 1979. *First-Order Dynamic Logic*. Lecture Notes in Computer Science, Vol. 68. Springer-Verlag, New York, NY. <https://doi.org/10.1007/3-540-09237-4>
- [19] Maurice Herlihy. 1993. A Methodology for Implementing Highly Concurrent Data Objects. *ACM Trans. Program. Lang. Syst.* 15, 5 (November 1993), 745–770. <https://doi.org/10.1145/161468.161469>
- [20] Lars Hörmander. 1985. *The analysis of linear partial differential operators. III*. Grundlehren der Mathematischen Wissenschaften [Fundamental Principles of Mathematical Sciences], Vol. 275. Springer-Verlag, Berlin, Germany. viii+525 pages. Pseudodifferential operators.
- [21] Lars Hörmander. 1985. *The analysis of linear partial differential operators. IV*. Grundlehren der Mathematischen Wissenschaften [Fundamental Principles of Mathematical Sciences], Vol. 275. Springer-Verlag, Berlin, Germany. vii+352 pages. Fourier integral operators.
- [22] IEEE 2004. IEEE TCSC Executive Committee. In *Proceedings of the IEEE International Conference on Web Services (ICWS '04)*. IEEE Computer Society, Washington, DC, USA, 21–22. <https://doi.org/10.1109/ICWS.2004.64>
- [23] Markus Kirschmer and John Voight. 2010. Algorithmic Enumeration of Ideal Classes for Quaternion Orders. *SIAM J. Comput.* 39, 5 (Jan. 2010), 1714–1747. <https://doi.org/10.1137/080734467>
- [24] Donald E. Knuth. 1997. *The Art of Computer Programming, Vol. 1: Fundamental Algorithms (3rd. ed.)*. Addison Wesley Longman Publishing Co., Inc.
- [25] David Kosior. 2001. *Understanding Policy-Based Networking* (2nd. ed.). Wiley, New York, NY.
- [26] Leslie Lamport. 1986. *L^AT_EX: A Document Preparation System*. Addison-Wesley, Reading, MA.
- [27] Newton Lee. 2005. Interview with Bill Kinder: January 13, 2005. Video. *Comput. Entertain.* 3, 1, Article 4 (Jan.-March 2005). <https://doi.org/10.1145/1057270.1057278>
- [28] Dave Novak. 2003. Solder man. Video. In *ACM SIGGRAPH 2003 Video Review on Animation theater Program: Part I - Vol. 145 (July 27–27, 2003)*. ACM Press, New York, NY, 4. <https://doi.org/99.9999/woot07-S422>
- [29] Barack Obama. 2008. A more perfect union. Video. (5 March 2008). Retrieved March 21, 2008 from <http://video.google.com/videoplay?docid=6528042696351994555>
- [30] Poker-Edge.Com. 2006. Stats and Analysis. (March 2006). Retrieved June 7, 2006 from <http://www.poker-edge.com/stats.php>
- [31] Bernard Rous. 2008. The Enabling of Digital Libraries. *Digital Libraries* 12, 3, Article 5 (July 2008). To appear.
- [32] Mehdi Saeedi, Morteza Saheb Zamani, and Mehdi Sedighi. 2010. A library-based synthesis methodology for reversible logic. *Microelectron. J.* 41, 4 (April 2010), 185–194.
- [33] Mehdi Saeedi, Morteza Saheb Zamani, Mehdi Sedighi, and Zahra Sasanian. 2010. Synthesis of Reversible Circuit Using Cycle-Based Approach. *J. Emerg. Technol. Comput. Syst.* 6, 4 (Dec. 2010).
- [34] S.L. Salas and Einar Hille. 1978. *Calculus: One and Several Variable*. John Wiley and Sons, New York.
- [35] Joseph Scientist. 2009. The fountain of youth. (Aug. 2009). Patent No. 12345, Filed July 1st., 2008, Issued Aug. 9th., 2009.
- [36] Stan W. Smith. 2010. An experiment in bibliographic mark-up: Parsing metadata for XML export. In *Proceedings of the 3rd. annual workshop on Librarians and Computers (LAC '10)*, Reginald N. Smythe and Alexander Noble (Eds.), Vol. 3. Paparazzi Press, Milan Italy, 422–431. <https://doi.org/99.9999/woot07-S422>
- [37] Asad Z. Spector. 1990. Achieving application requirements. In *Distributed Systems* (2nd. ed.), Sape Mullender (Ed.). ACM Press, New York, NY, 19–33. <https://doi.org/10.1145/90417.90738>
- [38] Harry Thornburg. 2001. Introduction to Bayesian Statistics. (March 2001). Retrieved March 2, 2005 from <http://ccrma.stanford.edu/~jos/bayes/bayes.html>
- [39] TUG 2017. Institutional members of the T_EX Users Group. (2017). Retrieved May 27, 2017 from <http://wwtug.org/instrmem.html>
- [40] Boris Veytsman. [n. d.]. acmart—Class for typesetting publications of ACM. ([n. d.]). Retrieved May 27, 2017 from <http://www.ctan.org/pkg/acmart>

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Figure 1: A sample black and white graphic.



Figure 2: A sample black and white graphic that has been resized with the includegraphics command.

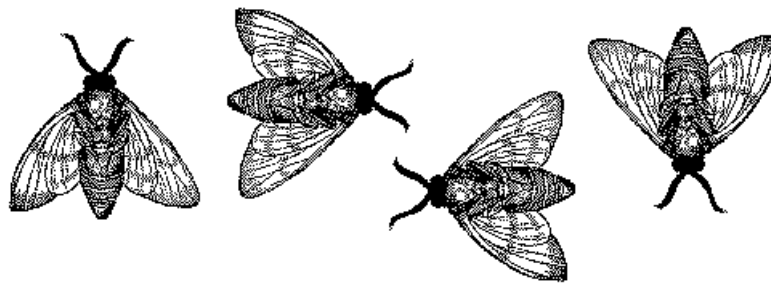


Figure 3: A sample black and white graphic that needs to span two columns of text.

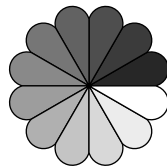


Figure 4: A sample black and white graphic that has been resized with the includegraphics command.

LIST OF TABLES

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Table 1: Frequency of Special Characters

Non-English or Math	Frequency	Comments
\emptyset	1 in 1,000	For Swedish names
π	1 in 5	Common in math
\$	4 in 5	Used in business
Ψ_1^2	1 in 40,000	Unexplained usage

Table 2: Some Typical Commands

Command	A Number	Comments
<code>\author</code>	100	Author
<code>\table</code>	300	For tables
<code>\table*</code>	400	For wider tables

Optimizing Mass Transit Bus Routes with Big Data

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ABSTRACT

This paper provides a sample of a \LaTeX document which conforms, somewhat loosely, to the formatting guidelines for ACM SIG Proceedings.

KEYWORDS

ACM proceedings, \LaTeX , text tagging

1 INTRODUCTION

The *proceedings* are the records of a conference. ACM seeks to give these conference by-products a uniform, high-quality appearance. To do this, ACM has some rigid requirements for the format of the proceedings documents: there is a specified format (balanced double columns), a specified set of fonts (Arial or Helvetica and Times Roman) in certain specified sizes, a specified live area, centered on the page, specified size of margins, specified column width and gutter size[1].

ACKNOWLEDGMENTS

The authors would like to thank Prof..

REFERENCES

- [1] Keven Richly, Ralf Teusner, Alexander Immer, Fabian Windheuser, and Lennard Wolf. 2015. Optimizing Routes of Public Transportation Systems by Analyzing the Data of Taxi Rides. In *Proceedings of the 1st International ACM SIGSPATIAL Workshop on Smart Cities and Urban Analytics (UrbanGIS'15)*. ACM, New York, NY, USA, 70–76. <https://doi.org/10.1145/2835022.2835035>

Big Data Applications in Electric Power Distribution

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ABSTRACT

Now-a-days, the process of storing the power measurements have changed. Conventional meters are replaced by the smart meters. New distribution management systems like SCADA and AMI are implemented to monitor power distribution. These smart meters record the readings and communicate the data to the server. However, these systems are designed to generate the readings very frequently i.e., 15 minutes to an hour. Upon that, smart meters are being deployed at every possible location to improve the accuracy of the data. This advancements in electric power distribution system results in enormous amounts of data which requires advance analytics to process, analyse and store data. This paper discusses about the implementation of Big Data technologies, challenges of implementing Big Data in Electric Power Distribution Systems. [1]

KEYWORDS

Big Data, Power Distribution, Smart Power

1 INTRODUCTION

Volume of data is increasing. According to forbes, it is said that, world's data utilization will increase to 44 zettabytes from the current utilization of 4.4 zettabytes. To process this data, Big Data analytics will be useful. But, instantiating a big data architecture is not easy task.

In electrical Power Distribution industry, data deluge is picking its pace. The data which was recorded for month, is now being noted for very small intervals. This quadruples the amount of data that should be process. There is a lot of potential work to be put in for designing a good Big Data architecture to process and analyse this data. Most of the power generation units are developing their infrastructure to support these designs.

1.1 Data Sources

Smart meters which are placed at customer's vicinity will record the consumption of a specific group of customers. This data can be used to analyse the behaviour of customer for certain circumstances of weather and environment.

Distribution systems which manage the distribution of power, generate large amount of data related to voltages and currents at various levels of distribution. This data is very important in analysing the load level and demand for the distribution circle.

Power measuring units at generation. This data is used to analyse the behaviour of generator and amount of power generation that will be required to supply enough power. This data will be used to decide the functioning of generators.

Old market data will be used to analyse the pricing and marketing strategies. These data is more focused on users and their behaviour.

1.2 4 v's in Big Data in Power Distribution System

Volume: The data is periodically generated by many data sources like smart meters, machines and other appliances. Variety: Each data source in electric power distribution system is explicit to each other. Each source has its own frequency of data generation and its own method of data generation. Thus, the data is heterogeneous. Velocity: is the speed at which the data is available for the end user. Veracity: It deals with the correctness of the data. As all the data collected by sensors, meter tend to have various losses, correction algorithms should be defined to find the accurate data. Their might be chances for data transfer losses.

REFERENCES

- [1] Amr A. Munshi and Yasser A.-R.I. Mohamed. 2017. Big data framework for analytics in smart grid. *Electric Power Systems* (2017).

My First paper

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ABSTRACT

This paper edit by zzc

KEYWORDS

info523 big data

1 INTRODUCTION

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2 THE BODY OF THE PAPER

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3 CONCLUSIONS

This is the conclusion

ACKNOWLEDGMENTS

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My great Big Dat Paper

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ABSTRACT

THIS IS AN ABSTRACT

KEYWORDS

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3 CONCLUSIONS

this is the conclusion

ACKNOWLEDGMENTS

The authors would like to thank Dr. Yuhua Li for providing the matlab code of the *BEPS* method.

The authors would also like to thank the anonymous referees for their valuable comments and helpful suggestions. The work is supported by the National Natural Science Foundation of China under Grant No.: 61273304 and Young Scientist's Support Program (<http://www.nnsf.cn/youngscientsts>).

Using Big Data for Fact Checking

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ABSTRACT

This paper intends to discuss how Big Data can be used to spot fake news, bad data used by politicians, advertisers, and scientists.

KEYWORDS

ACM proceedings, \LaTeX , text tagging

1 INTRODUCTION

Big Data can be used to spot fake news, bad data used by politicians, advertisers, and scientists.

ACKNOWLEDGMENTS

I thank all the people who made this possible

Big Data Analytics in Sports - Soccer

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ABSTRACT

The aim of this paper is to provide an understanding as to how big data is playing a huge role in Football clubs helping them scout players.

KEYWORDS

Big Data, Soccer , Scouting

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Big Data Applications in Media and Entertainment Industry

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ABSTRACT

This paper demonstrates the growth of big data and its various applications in media and entertainment industry. We showcase the rapid surge of big data and the increasing need for big data technologies. We also describe the problems that come with big data and its challenges in the industry. We then present various utilization of big data and why big data is important in the advancement of media and entertainment industry.

KEYWORDS

Big Data, Media, Entertainment Industry, Technology

1 INTRODUCTION

"2013 is the first year known as the beginning of big data, the world officially enter the era of big data. But big data is not clearly defined, until now, except for large enterprise data also have different definitions, such as Wanda defines the big data as DIKW hierarchical model, that is, Data, Knowledge and wisdom" [3].

"The era of big data is not coming; it is here. The birth and growth of big data was the defining characteristic of the 2000s. As obvious and ordinary as this might sound to us today, we are still unraveling the practical and inspirational potential of this new era. Google processes over 20 petabytes of data a day (a little less than half the entire written works of mankind from the beginning of recorded history in all languages). In addition to collecting and searching for more information, the technologies that allow us to capture and interpret that data are improving every time we blink. Something as simple as a snapshot has become a data collection event" [1].

"Big Data is about the growing challenge that organizations face as they deal with large and fast-growing sources of data or information that also present a complex range of analysis and use problems. Big Data technologies describe a new generation of technologies and architectures, designed to economically extract value from very large volumes of a wide variety of data, by enabling high-velocity capture, discovery, and/or analysis" [2].

"IDC, International Data Corporation, believes that organizations that are best able to make real-time business decisions using Big Data streams will thrive, while those that are unable to embrace and make use of this shift will increasingly find themselves at a competitive disadvantage in the market and face potential failure. This will be particularly true in industries experiencing high rates of business change and aggressive consolidation" [2].

"New data sources for Big Data include industries that just recently began to digitize their content. In virtually all of these cases, data growth rates in the past five years have been near infinite, since in most cases it started from zero. The media and entertainment industry moved to digital recording, production, and delivery in the

past five years and is now collecting large amounts of rich content and user viewing behaviors" [2].

"The problem with the massive data collection and distribution system we have created is: big data is a big mess. Most of the data we capture in our daily lives just sits around, cluttering up storage space on our devices and slowing down our connections" [1].

"Under the era of big data, the traditional TV media are facing opportunities and challenges, how to deal with challenges and to seize the opportunity is the traditional TV media should concern. Comparison to the Traditional TV media, network TV and new media, the biggest advantage is that the traditional TV media have high-quality TV content, and the strong support of national policy. Traditional TV media itself has a lot of data, but traditional media did not make good use of these data that has been the impact of new media" [3].

2 APPLICATIONS IN MEDIA AND ENTERTAINMENT INDUSTRY

"Social media solutions such as Facebook, Foursquare, and Twitter are the newest new data sources. A number of new businesses are now building Big Data environments, based on scale-out clusters using power-efficient multicore processors like the AMD Opteron 4000 and 6000 Series platforms, that leverage consumers' (conscious or unconscious) nearly continuous streams of data about themselves (e.g., likes, locations, opinions). Thanks to the "network effect" of successful sites, the total data generated can expand at an exponential rate. One company IDC spoke with collected and analyzed over 4 billion data points (Web site cut-and-paste operations) in its first year of operation and is approaching 20 billion data points less than a year later" [2].

"Some of the most interesting, but also most challenged, industries when it comes to Big Data adoption will be utilities and content service providers (e.g., cable TV, mobile carriers). These communities (with assists from related companies such as video gaming system and appliance manufacturers) are building out Big Data generating fabrics. Their opportunity now is to figure out how to handle and then do something with all that data, despite the fact that from a cultural standpoint data guardianship and use were much less in the past" [2].

"An additional hurdle for these industries is that it isn't enough to just get the "answers" from Big Data platforms. They also need to implement automated response systems (e.g., automated power management or "in game" ad placement) that will ultimately be the foundation of their business models" [2].

"We would like to offer a set of rules for the new data world: 1) big is not enough, and 2) it is neither necessary nor practical to fix every piece of data we have collected as a species into some particular

order” [1].

“We are already capturing massive quantities of data about our entertainment. Take, for example, *Supernatural*, an American horror series, created by Eric Kripke in 2005.1 Now in its seventh season, it has generated roughly 112 hours of footage. So we have a lot of pixels, yes, but we also have much more. We have every action of every character; every line of dialogue; a history of when, where, and how often everyone dies. Because all of that information is data, what we actually have, in and around those 112 hours of pixels, is a map to the world of *Supernatural*, and the characters inside it” [1]. “Today, all of that footage and all of that information is locked away in old style data collections: fixed and unwieldy. But if we can store all that information in a system, modeled more on biology than books, and apply our significant and increasing processing power to analyze and respond to the world, rather than just move it around mechanically, then we have the possibility of generating and interacting with the world and the characters of *Supernatural* (or possibly even a story you like). This requires computational intelligence, not a Google search. It is not the ability to hunt down a single piece of data in the massive haystack of global information but rather the ability to make something new and interesting emerge out of that data” [1].

“In the era of big data, mass user behavior data is used to model predictions. Where big data are the personal recommendation system in a typical application of radio and television, The traditional approach is based on the user’s clicking behavior, to analyze the user’s preferences, then recommend related programs. But now in order to recommend more accurate, use not just the set-top box data for statistical analysis, but also dig out the sharing behavior on the user network along with the comment feature behavior and other behaviors, in order to better characterize user portrait. In the era of big data, television media should be the depth of excavation and analysis of user information on the user’s viewing behavior, the initiative to understand what users really want to see, in order to provide better services for television users. In other countries, the television media successful application of large data typical case is the “house of cards”, which analyzes the form of selection and decision-making with actors play using the big data” [3].

“Technically, the first to take in consideration is television media are capable of producing large amounts of data every day, how to integrate their data, define combining their data assets to create a connection between the television media and their users, effective analysis of audience preferences to realize customization. secondly the traditional TV media have with respect to network operators, the biggest advantage is that they have high-quality TV content, but how to use these high quality content effectively disseminated to users. in addition to drawing telecommunications powerful content communication technologies and outside network framework, also taking into account the characteristics of the television media itself” [3].

“The most important point that TV media can use big data technology is that television is the media itself has data, the data are the main source of set-top boxes, network management systems. To collect the data more widely, some companies such as Nielsen TV media can also take the technology to provide brain waves, using 32 sensors, acquisition frequency of 500 times / Sec, measurable

indicators are mainly about emotional investment, triggering memories and attention. Therefore, data collection is more mature as it showed” [3].

“But the TV media data from multiple data sources and scattered, besides the internal data such as set-top box data, network management systems data, BOSS system, etc., as well as external data, such as online user behavior data, data integration is the primary challenge in television media big data applications. How TV media make internal data and external data streams to achieve mutual exchange, how to create their own big data, sort out their own data assets, which need the support by big data technology. And television media use Big Data technologies to meet the individual needs of the “precise communication”, which can improve service quality, protection of cultural rights and interests of the public, the media TV plays disseminating information, building culture, guide public opinion, the responsibility to resist foreign cultural erosion at the same time, therefore more need to focus on high-tech applications” [3].

3 CONCLUSION

Put here an conclusion. Conclusions and abstracts must not have any citations in the section.

ACKNOWLEDGMENTS

The authors would like to thank Dr. Gregor von Laszewski for his support and suggestions to write this paper as well as Lee Yang for her proofreading on this paper.

REFERENCES

- [1] Tawny Schlieski and Brian David Johnson. 2012. Entertainment in the Age of Big Data. *Proc. IEEE* 100, Special Centennial Issue (May 2012), 1404–1408. <https://doi.org/10.1109/JPROC.2012.2189918> HID: 233, Accessed: 2017-09-20.
- [2] Richard L. Villars, Carl W. Olofson, and Matthew Eastwood. 2011. Big data: What it is and why you should care. *White Paper, IDC* 14 (June 2011). www.tracemyflows.com/uploads/big_data/idc.amd.big_data.whitepaper.pdf HID: 233, Accessed: 2017-09-20.
- [3] Chunjie Zhang, Wenqian Shang, Weiguo Lin, Yongan Li, and Rui Tan. 2017. Opportunities and challenges of TV media in the big data era. In *2017 IEEE/ACIS 16th International Conference on Computer and Information Science (ICIS)*. IEEE, Wuhan, China, 551–553. <https://doi.org/10.1109/ICIS.2017.7960053> HID: 233, Accessed: 2017-09-20.

Big Data Analytics in Tourism Industry

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ABSTRACT

This paper focuses on how the tourism industry has been impacted by the development of the Internet and improvements in information and communication technologies and how big data analytic can influence tourism research.

KEYWORDS

Big data analytics, tourism

1 INTRODUCTION

this is my introduction [1].

2 CONCLUSIONS

This my conclusion.

ACKNOWLEDGMENTS

The authors would like to thank I523.

REFERENCES

- [1] G. Chareyron, J. Da-Rugna, and T. Raimbault. 2014. Big data: A new challenge for tourism. In *2014 IEEE International Conference on Big Data (Big Data)*. 5–7. <https://doi.org/10.1109/BigData.2014.7004475>

My great Big Dat Paper

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ABSTRACT

This paper provides a sample of a \LaTeX document which conforms, somewhat loosely, to the formatting guidelines for ACM SIG Proceedings.

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ACM proceedings, \LaTeX , text tagging

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Big Data Application in Restaurant Industry

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ABSTRACT

This paper provides insight into how big data can be used in the restaurant industry. It will also explore how big data can be collected and analyzed so that it helps restaurant industry to do better in profit margins and give their customer a great hospitality experience. Paper will try to find out current technologies and solutions available in big data processing for the restaurant industry. It will also focus on various challenges involved in using big data in the restaurant business. This paper is a review/research paper which considers information from various sources like articles, books and web to provide the information.

KEYWORDS

big data, restaurant, application, analytics

1 INTRODUCTION

Big data is revolutionizing the way business is getting conducted in various industries. The retailer like Amazon uses it to provide personalized buying suggestions and social networking site like LinkedIn uses it to connect more people. Question is, do we have big data available for the restaurant industry and how big data application is going to be beneficial. The restaurant industry is facing challenges like shrinking labor pool, moderate economic growth, costly labor, challenging profit margin, high competition, moderate sales growth and growing expectation from the customer on the dining experience, can big data application help overcome these challenges.[1]

2 BIG DATA FOR RESTAURANT

3 COLLECT BIG DATA

4 BIG DATA ANALYTICS

5 SOLUTION AND TOOLS AVAILABLE

6 CHALLENGES OF USING BIG DATA

7 CONCLUSIONS

This paragraph will end the body of this sample document. Remember that you might still have Acknowledgments or Appendices; brief samples of these follow. There is still the Bibliography to deal with; and we will make a disclaimer about that here: with the exception of the reference to the L^AT_EX book, the citations in this paper are to articles which have nothing to do with the present subject and are used as examples only.

A HEADINGS IN APPENDICES

The rules about hierarchical headings discussed above for the body of the article are different in the appendices. In the **appendix** environment, the command **section** is used to indicate the start of each Appendix, with alphabetic order designation (i.e., the first is

A, the second B, etc.) and a title (if you include one). So, if you need hierarchical structure *within* an Appendix, start with **subsection** as the highest level. Here is an outline of the body of this document in Appendix-appropriate form:

A.1 Introduction

A.2 The Body of the Paper

A.2.1 *Type Changes and Special Characters.*

A.2.2 *Math Equations.*

Inline (In-text) Equations.

Display Equations.

A.2.3 *Citations.*

A.2.4 *Tables.*

A.2.5 *Figures.*

A.2.6 *Theorem-like Constructs.*

A Caveat for the T_EX Expert.

A.3 Conclusions

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- [1] 2016. Restaurant industry to navigate continued challenges in 2016. (02 2016). <http://www.restaurant.org/News-Research/News/Restaurant-industry-to-navigate-continued-challeng>

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i523

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Big Data and Data Visualization

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ABSTRACT

This paper will provide an overview on how analytical findings of Big Data solutions can be visualized using various visualization technologies

KEYWORDS

i523

1 INTRODUCTION

Big data is widely used technology to consume huge amount of data. While there are various technologies available to process this data it is very important to have interactive, intuitive, user friendly data visualizations in place so that decision makers, business users will have clear understanding of findings of big data solutions. These visualizations will make help us to make informed decision looking at various trends over the period of time.

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An Overview of Big Data Applications in Mental Health Treatment

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ABSTRACT

Mental health treatment presents with complex informational challenges, which could be effectively tackled with big data techniques. However, as researchers and treatment providers explore these applications, they find a lack of infrastructure and ethical concerns hamper their progress. [? ? ? ? ?].

KEYWORDS

Mental Health Treatment

1 INTRODUCTION

Big Idea:

Mental health difficulties are a prevalent problem across the United States, and worldwide. Mental illness of some kind was prevalent among 17.9 % of Americans in 2015, and of that number 4% experienced serious functional impairment as a result [?]. List worldwide stats. List stats on objective impairments, including suicide, unemployment, crime/incarceration, substance use. It is estimated that mental health issues had a 100 billion dollars cost on the US economy in 2002 [?] (more recent stats), and in 2015 there were over 12,000 mental health treatment facilities in the US [?].

1.1 The State of Mental Health Treatment

Brief summary of Mental Health Treatment Big picture impact on population and economy:

Goal of mental health treatment Techniques
Brief summary of Big Data Big picture impact on everyday life and economy Goal of Big data analytics Techniques
Thesis

2 BIG DATA APPLICATIONS IN MENTAL HEALTH TREATMENT

Introduce concept of different levels of maturity

2.1 Mature Applications

2.2 Developing Applications

2.3 Initiatives

3 CONCLUSIONS

3.1 Barriers

3.2 Future Directions

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Big Data Platforms as a Service

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ABSTRACT

This paper uses an industry example of a large pharmaceutical client to explore the problems faced to implementing big data platform solutions and the benefits these solutions offer once in use.

KEYWORDS

Big Data, Platform, Cloud Architecture

4 PLATFORMS AND BIG DATA

ACKNOWLEDGMENTS

The authors would like to thank Dr. Gregor Von Laszewski and Teaching Assistants Saber Sheybani and Miao Jiang.

1 INTRODUCTION

Most pharmaceutical companies have adopted one or many Laboratory Information Management Systems (LIMS) and/or Electronic Laboratory Notebooks (ELN). These systems are often implemented as standalone systems within a single Research and Development (R&D) group or even within a single laboratory. A problem seen in large- or mid-sized pharmaceutical companies is that different research groups within the same organization often implement different LIMS or ELN. This severely restricts data sharing and reuse between groups which leads to many problems including the same experiment being run multiple times between different groups, regulatory inefficiencies in tracking sample use and storage, and bottlenecked development cycles due to missing data.

One of the emerging strategies to combat the problems arising from isolated systems is to combine systems using cloud computing. Platform as a Service (PaaS) provides an environment for the development and execution of applications and software tools. The platform is the heart of a cloud computing infrastructure that enables software on-top as well as data created from such software to be accessed and used by a multitude of users[?].

This review seeks to outline the benefits and challenges of using a PaaS approach to share and regulate R&D data within a large pharmaceutical company that has already implemented numerous laboratory systems.

2 IMPORTANCE OF PLATFORMS

Many organizations struggle with the aim of sharing data and processing tools among researchers. SaaS provides a method of better resource utilization while reducing maintenance costs[?].

3 IMPLEMENTING PLATFORMS

The overarching concern with storing data outside of the organization is security. Numerous methods have been developed to assure cloud security such as integrated stacks used by Google and Microsoft Azure and Service Level Agreements (SLAs)[?].

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Big Data Analytics for Municipal Waste Management

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ABSTRACT

As waste management becomes a greater concern for cities and municipalities around the world, big data analysis has the potential to not only help assess the current waste management strategies, but also provide information that can be used to optimize the systems used in various institutions, local government, companies, etc.

KEYWORDS

Waste Management, Big Data, Local Government

1 INTRODUCTION

Concept of waste management

Solid Waste Management (SWM) is a set of consistent and systematic regulations related to control generation, storage, collection, transportation, processing and land filling of wastes according to the best public health principles, economy, preservation of resources, aesthetics, other environmental requirements and what the public attends to [1]

Managing solid waste is one of the most essential services which often fails due to rapid urbanization along with changes in the waste quantity and composition. Quantity and composition vary from country to country making them difficult to adopt for waste management system which may be successful at other places. Quantity and composition of solid waste vary from place to place [3]

2 OPPORTUNITIES FOR WASTE MANAGEMENT OPTIMIZATION

By collecting and storing data related to types of waste, quantities, periodicity and composition.

2.1 GIS Analytics

3 STATISTICS AND WASTE MANAGEMENT

While rural area usually generates organic and biodegradable, urban area produces waste influenced by culture and practices of society. [3] p47 to 63

There are many data analysis methods that are used when studying waste management, but the two most popular are PCA and PLS1. [2]

decision makers should distinguish between optimal, good, and fortuitous decision-making. In the optimal decision making, one can solve the optimal problem using the techniques available in other fields. In this solution method, generally some constraints (criteria) are considered, where the function(s) is to be optimized through applying some methods. Good decision-making is done based on experience, trial and error or comparison between different options of the integrated SWM. Although it is possible to choose

decisions close to the optimal state using this decision-making method, today these methods are not applicable due to increased number of different combinations in the decision-making process. In the fortuitous decision-making, since decisions are made with no scientific base, so the results are not acceptable [1]

The process of solving a math program requires a large number of calculations and is, therefore, best performed by a computer program. Lingo is a mathematical modeling language designed particularly for formulating and solving a wide variety of optimization problems including linear programming. Lingo optimization software uses branch and bound methods to solve problems of this type. [1]

4 CONCLUSIONS

Working on this

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- [2] K. Bofkham, E. Smidt, and J. Tintner. 2013. Application of Multivariate Data Analyses in Waste Management. In *Multivariate Analysis in Management, Engineering and the Sciences*, Leandro Valim de Freitas and Ana Paula Barbosa Rodrigues de Freitas (Eds.). InTech, Rijeka, Chapter 02, 24. <https://doi.org/10.5772/53975>
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2 THE BODY OF THE PAPER

Typically, the body of a paper is organized into a hierarchical structure, with numbered or unnumbered headings for sections, subsections, sub-subsections, and even smaller sections. The command `\section` that precedes this paragraph is part of such a hierarchy. \LaTeX handles the numbering and placement of these headings for you, when you use the appropriate heading commands around the titles of the headings. If you want a sub-subsection or smaller part to be unnumbered in your output, simply append an asterisk to the command name. Examples of both numbered and unnumbered headings will appear throughout the balance of this sample document.

Because the entire article is contained in the `document` environment, you can indicate the start of a new paragraph with a blank line in your input file; that is why this sentence forms a separate paragraph.

2.1 Type Changes and *Special* Characters

We have already seen several typeface changes in this sample. You can indicate italicized words or phrases in your text with the command `\textit`; emboldening with the command `\textbf` and typewriter-style (for instance, for computer code) with `\texttt`. But remember, you do not have to indicate typestyle changes when such changes are part of the *structural* elements of your article; for instance, the heading of this subsection will be in a sans serif¹ typeface, but that is handled by the document class file. Take care with the use of the curly braces in typeface changes; they mark the beginning and end of the text that is to be in the different typeface.

You can use whatever symbols, accented characters, or non-English characters you need anywhere in your document; you can find a complete list of what is available in the *\LaTeX User's Guide* [?].

2.2 Math Equations

You may want to display math equations in three distinct styles: inline, numbered or non-numbered display. Each of the three are discussed in the next sections.

2.2.1 Inline (In-text) Equations. A formula that appears in the running text is called an inline or in-text formula. It is produced by the `math` environment, which can be invoked with the usual `\begin . . . \end` construction or with the short form `$. . . $`. You can use any of the symbols and structures, from α to ω , available in \LaTeX [?]; this section will simply show a few examples of in-text equations in context. Notice how this equation:

$$\lim_{n \rightarrow \infty} x = 0,$$

set here in in-line math style, looks slightly different when set in display style. (See next section).

2.2.2 Display Equations. A numbered display equation—one set off by vertical space from the text and centered horizontally—is

¹ Another footnote here. Let's make this a rather long one to see how it looks. Footnotes must be avoided.

produced by the **equation** environment. An unnumbered display equation is produced by the **displaymath** environment.

Again, in either environment, you can use any of the symbols and structures available in \LaTeX ; this section will just give a couple of examples of display equations in context. First, consider the equation, shown as an inline equation above:

$$\lim_{n \rightarrow \infty} x = 0 \quad (1)$$

Notice how it is formatted somewhat differently in the **displaymath** environment. Now, we'll enter an unnumbered equation:

$$\sum_{i=0}^{\infty} x + 1$$

and follow it with another numbered equation:

$$\sum_{i=0}^{\infty} x_i = \int_0^{\pi+2} f \quad (2)$$

just to demonstrate \LaTeX 's able handling of numbering.

2.3 Citations

Citations to articles [? ? ? ?], conference proceedings [?] or maybe books [? ?] listed in the Bibliography section of your article will occur throughout the text of your article. You should use BibTeX to automatically produce this bibliography; you simply need to insert one of several citation commands with a key of the item cited in the proper location in the .tex file [?]. The key is a short reference you invent to uniquely identify each work; in this sample document, the key is the first author's surname and a word from the title. This identifying key is included with each item in the .bib file for your article.

The details of the construction of the .bib file are beyond the scope of this sample document, but more information can be found in the *Author's Guide*, and exhaustive details in the *\LaTeX User's Guide* by Lamport [?].

This article shows only the plainest form of the citation command, using \cite.

Some examples. A paginated journal article [?], an enumerated journal article [?], a reference to an entire issue [?], a monograph (whole book) [?], a monograph/whole book in a series (see 2a in spec. document) [?], a divisible-book such as an anthology or compilation [?] followed by the same example, however we only output the series if the volume number is given [?] (so Editor00a's series should NOT be present since it has no vol. no.), a chapter in a divisible book [?], a chapter in a divisible book in a series [?], a multi-volume work as book [?], an article in a proceedings (of a conference, symposium, workshop for example) (paginated proceedings article) [?], a proceedings article with all possible elements [?], an example of an enumerated proceedings article [?], an informally published work [?], a doctoral dissertation [?], a master's thesis: [?], an online document / world wide web resource [? ? ?], a video game (Case 1) [?] and (Case 2) [?] and [?] and (Case 3) a patent [?], work accepted for publication [?], 'YYYYb'-test for prolific author [?] and [?]. Other cites might contain 'duplicate' DOI and URLs (some SIAM articles) [?]. Boris / Barbara Beeton: multi-volume works as books [?] and [?].

A couple of citations with DOIs: [? ?].

Online citations: [? ? ?].

We use jabref to manage all citations. A paper without managing a bib file will be returned without review. in the bibtex file all urls are added to rfernces with the url filed. They are not to be included in the *howpublished* or *note* field.

2.4 Tables

Because tables cannot be split across pages, the best placement for them is typically the top of the page nearest their initial cite. To ensure this proper "floating" placement of tables, use the environment **table** to enclose the table's contents and the table caption. The contents of the table itself must go in the **tabular** environment, to be aligned properly in rows and columns, with the desired horizontal and vertical rules. Again, detailed instructions on **tabular** material are found in the *\LaTeX User's Guide*.

Immediately following this sentence is the point at which Table ?? is included in the input file; compare the placement of the table here with the table in the printed output of this document.

[Table 1 about here.]

To set a wider table, which takes up the whole width of the page's live area, use the environment **table*** to enclose the table's contents and the table caption. As with a single-column table, this wide table will "float" to a location deemed more desirable. Immediately following this sentence is the point at which Table ?? is included in the input file; again, it is instructive to compare the placement of the table here with the table in the printed output of this document.

[Table 2 about here.]

It is strongly recommended to use the package booktabs [?] and follow its main principles of typography with respect to tables:

- (1) Never, ever use vertical rules.
- (2) Never use double rules.

It is also a good idea not to overuse horizontal rules.

2.5 Figures

Like tables, figures cannot be split across pages; the best placement for them is typically the top or the bottom of the page nearest their initial cite. To ensure this proper "floating" placement of figures, use the environment **figure** to enclose the figure and its caption.

This sample document contains examples of .eps files to be displayable with \LaTeX . If you work with pdf \LaTeX , use files in the .pdf format. Note that most modern \TeX systems will convert .eps to .pdf for you on the fly. More details on each of these are found in the *Author's Guide*.

[Figure 1 about here.]

[Figure 2 about here.]

As was the case with tables, you may want a figure that spans two columns. To do this, and still to ensure proper "floating" placement of tables, use the environment **figure*** to enclose the figure and its caption. And don't forget to end the environment with **figure***, not **figure**!

[Figure 3 about here.]

[Figure 4 about here.]

2.6 Theorem-like Constructs

Other common constructs that may occur in your article are the forms for logical constructs like theorems, axioms, corollaries and proofs. ACM uses two types of these constructs: theorem-like and definition-like.

Here is a theorem:

THEOREM 2.1. *Let f be continuous on $[a, b]$. If G is an antiderivative for f on $[a, b]$, then*

$$\int_a^b f(t) dt = G(b) - G(a).$$

Here is a definition:

Definition 2.2. If z is irrational, then by e^z we mean the unique number that has logarithm z :

$$\log e^z = z.$$

The pre-defined theorem-like constructs are **theorem**, **conjecture**, **proposition**, **lemma** and **corollary**. The pre-defined definition-like constructs are **example** and **definition**. You can add your own constructs using the *amsthm* interface [?]. The styles used in the `\theoremstyle` command are **acmplain** and **acmdefinition**.

Another construct is **proof**, for example,

PROOF. Suppose on the contrary there exists a real number L such that

$$\lim_{x \rightarrow \infty} \frac{f(x)}{g(x)} = L.$$

Then

$$l = \lim_{x \rightarrow c} f(x) = \lim_{x \rightarrow c} \left[gx \cdot \frac{f(x)}{g(x)} \right] = \lim_{x \rightarrow c} g(x) \cdot \lim_{x \rightarrow c} \frac{f(x)}{g(x)} = 0 \cdot L = 0,$$

which contradicts our assumption that $l \neq 0$. \square

3 CONCLUSIONS

This paragraph will end the body of this sample document. Remember that you might still have Acknowledgments or Appendices; brief samples of these follow. There is still the Bibliography to deal with; and we will make a disclaimer about that here: with the exception of the reference to the \LaTeX book, the citations in this paper are to articles which have nothing to do with the present subject and are used as examples only.

A HEADINGS IN APPENDICES

The rules about hierarchical headings discussed above for the body of the article are different in the appendices. In the **appendix** environment, the command **section** is used to indicate the start of each Appendix, with alphabetic order designation (i.e., the first is A, the second B, etc.) and a title (if you include one). So, if you need hierarchical structure *within* an Appendix, start with **subsection** as the highest level. Here is an outline of the body of this document in Appendix-appropriate form:

A.1 Introduction

A.2 The Body of the Paper

A.2.1 *Type Changes and Special Characters.*

A.2.2 *Math Equations.*

Inline (In-text) Equations.

Display Equations.

A.2.3 *Citations.*

A.2.4 *Tables.*

A.2.5 *Figures.*

A.2.6 *Theorem-like Constructs.*

A Caveat for the \TeX Expert.

A.3 Conclusions

A.4 References

Generated by bibtex from your .bib file. Run latex, then bibtex, then latex twice (to resolve references) to create the .bbl file. Insert that .bbl file into the .tex source file and comment out the command `\thebibliography`.

B MORE HELP FOR THE HARDY

Of course, reading the source code is always useful. The file `acmart.pdf` contains both the user guide and the commented code.

ACKNOWLEDGMENTS

The authors would like to thank Dr. Yuhua Li for providing the matlab code of the *BEPS* method.

The authors would also like to thank the anonymous referees for their valuable comments and helpful suggestions. The work is supported by the National Natural Science Foundation of China under Grant No.: 61273304 and Young Scientists' Support Program (<http://www.nnsf.cn/youngscientists>).

List of Figures



Figure 1: A sample black and white graphic.



Figure 2: A sample black and white graphic that has been resized with the includegraphics command.

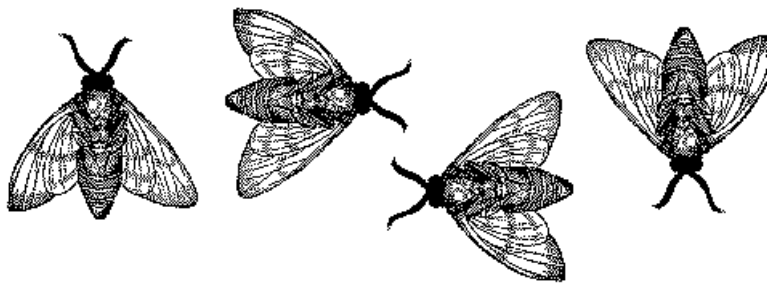


Figure 3: A sample black and white graphic that needs to span two columns of text.

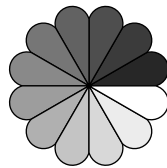


Figure 4: A sample black and white graphic that has been resized with the includegraphics command.

List of Tables

Table 1: Frequency of Special Characters

Non-English or Math	Frequency	Comments
Ø	1 in 1,000	For Swedish names
π	1 in 5	Common in math
\$	4 in 5	Used in business
Ψ_1^2	1 in 40,000	Unexplained usage

Table 2: Some Typical Commands

Command	A Number	Comments
<code>\author</code>	100	Author
<code>\table</code>	300	For tables
<code>\table*</code>	400	For wider tables

Impact of Big Data on the Privacy of Mental Health Patients

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ABSTRACT

Thanks to the rise of technology, the healthcare field has experienced an increase of health information on a daily basis. The increases in health information technology and electronic records have the potential improve clinical research. However, privacy remain a serious impediment to data utilization. By addressing patients privacy concerns, policymakers and researchers can help transform the mental health field, avoid unnecessary expenses, and establish proper norms to communicate sensitive health information.

1 INTRODUCTION

We live in an era of big data; data exists everywhere in large quantity. The advances in technology has opened the door for businesses to collect inconceivable amount of pieces of information on individuals via emails, smart-phones, sensors, and other social media. The 21st century has witnessed a data explosion; many fields have experienced a data deluge that can contribute to boost the economy via data analysis, make new discovery based on existing data, respond to health problems in quickly manner, and so forth. While it worth celebrating the rapid innovation of technology and the presence of data deluge, it is also crucial to consider the number of barriers and risks that come with the increase of big data. One of the barriers that big data faces is privacy. In the health-care industry, for example, it is not easy to access data due to privacy concern, which explain that policy makers have to establish proper norms and parameters for data collection and utilization. "When considering the risks that big data poses to individual privacy, policymakers should be mindful of its sizable benefits"[4]. While it is important to address the numerous advantages of big data, it remains relevant to figure out ways to prevent data leakage, and protect the privacy of individuals. We live in an era of big data; data is everywhere in large quantity. The advances in technology has opened the door for businesses to collect inconceivable information on individuals via emails, smart-phones, sensors, and other social media. The 21st century has witnessed a data explosion; many fields have experienced a data deluge that can contribute to encourage data analysis and boost the economy, make new discovery based on existing data, respond to health problems in quickly manner, and so forth. While it worth celebrating the rapid innovation of technology and the presence of data deluge, it is also crucial to consider the number of barriers and risks that come with the increase of big data. One of the barriers that big data faces is privacy. In the health-care industry, for example, it is not easy to access data due to privacy concern, which explain that policy makers have to establish proper norms and parameters for data collection and utilization. While it is important to address the numerous advantages of big data, it remains relevant to figure out ways to prevent data leakage, and protect the privacy of individuals. We live in an era of big data; data

is everywhere in large quantity. The advances in technology has opened the door for businesses to collect inconceivable information on individuals via emails, smart-phones, sensors, and other social media. The 21st century has witnessed a data explosion; many fields have experienced a data deluge that can contribute to encourage data analysis and boost the economy, make new discovery based on existing data, respond to health problems in quickly manner, and so forth. While it worth celebrating the rapid innovation of technology and the presence of data deluge, it is also crucial to consider the number of barriers and risks that come with the increase of big data. One of the barriers that big data faces is privacy. In the health-care industry, for example, it is not easy to access data due to privacy concern, which explain that policy makers have to establish proper norms and parameters for data collection and utilization. While it is important to address the numerous advantages of big data, it remains relevant to figure out ways to prevent data leakage, and protect the privacy of individuals. This paper showcases the advantages of big data and the ways to overcome the individual privacy concerns.[3]

2 ADVANTAGES OF BIG DATA

Big data presents a number of advantages. Big data helps businesses increase their productivity, it allows government to improve public sector administration and assists global organization in analyzing information. Big data can help to detect disease at an early stage and reduce the effect of seasonal disease on individual. Other advantages of big data analysis is present in many different areas, such as: smart grid, which helps to monitor and control electricity use; traffic management, which provides information on road and mass transit construction, traffic congestion; retail by studying customers behavior to improve store layout; payments by helping to detect fraud detection, etc. [4]. In their article, health Affairs, Heitmuller et al (2014) supported the idea that big data allow real time tracking of diseases, predicting outbreaks, and developing personalized healthcare. Big data can really help to maximize profits in many disciplines, including healthcare if harness properly. Khan et al, 2014 wrote that fiby harnessing big data, businesses gain many advantages, including increased operational efficiency, informed strategic direction, improved customer service, new products, and new customers and markets.fi While data exists in huge quantity in many fields, including the health care field. Individual Privacy remains a big problem that policymakers have to tackle to have proper access in the health care industry.

3 BARRIERS TO BIG DATA IN HEALTH-CARE

One of the barriers to big data in the health care, including mental health is privacy. Regardless of the effort of Policymakers to try to establish different strategies to protect individual health information, privacy remains a serious issue that scientists have to wrestle with when it comes to big data analytic. among the effort

of policy makers to secure health information, they have created, for example, Health Insurance Portability and Accountability Act of 1996 (HIPAA) established the norms to data privacy and security provisions for safeguarding medical and mental health information. Every provider in the healthcare industry must obey the HIPAA privacy laws if they want to continue to remain up and running. The HIPAA laws prohibit providers to share patient's information without their consent, and a lot of time patients refuse to share their personal information for research purposes by fear of being ostracized, discriminated against, marginalized, etc. "The unintended release of a person's health information into the public realm has huge potential to undermine personal dignity and cause embarrassment and financial harm"[5]. While the healthcare field is faced with a huge increase in health information, individual privacy concern remain a huge conundrum to big data analysis. What can policymakers do to overcome this privacy concern?[1].

4 WAYS TO OVERCOME PRIVACY CONCERN

4.0.1 Data Anonymization. One way policymakers can protect individual privacy is by making the data anonymous. Heitmueller et al (2014), identified three types of data: personal and proprietary data that is controlled by individuals, government controlled data, which government can restrict access, and open data commons, which means that the data is available to all. They advocated for linking data together that can help to improve care planning at both the patient and population levels. They also argued for an increase of the amount of information that is available as open data commons. Though anonymization of data appears to be a great technique that policy makers could espouse to address the privacy concern, other study indicated that the data can be replaced back to their respective individual.[5]. Tene and Polonetsky, 2013 advocated for data de-identification and data minimization. The term de-identification is the process of making the data anonymous, but these author explained that this protective measure is valid under the security and accountability principles, but policymakers should think about other ways to protect patient's privacy. The term data minimization, is the extent to which organizations limit the collection of personal data. It worth noting that data minimization is contrary to big data analysis because data minimization encourages deleting data that is no longer in use to protect privacy, whereas big data prefers to archive the data for ulterior usage. While this technique can help protect privacy, it is antithetic to big data analysis because it contributes to reduce the amount of data collection that could be utilized in data analysis to make new discovery, respond to crisis, and maximize profits [4]. Swan (2013) advanced the concept quantified self, which can be understood by the fact that individuals engage in self-tracking of personal health data, such as heart rate, weight, energy level, sleep quality, cognitive performance, etc. these individuals use devices like smart-phones, watches, sensors, in the collection of their personal data. According to Swan (2013)

5 CONCLUSION

We have seen that health data exist in large quantity; however, privacy concern is one of the biggest barriers that scientists face when it comes to utilize of health data. Certain researchers proposed

data anonymization as a solution to privacy concern, others proposed minimization of the amount of data collected on individual patients. Privacy concerns exist wherever personally identifiable information or other sensitive information is collected and stored in any form.[2] This indicates that scientists will allow wrestle with privacy concern whenever they are dealing with personal health information.

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A Caveat for the T_EX Expert.

A.3 Conclusions

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.bbl file. Insert that .bbl file into the .tex source file and comment out the command \thebibliography.

REFERENCES

- [1] Ann Cavoukian and Jeff Jonas. 2012. *Privacy by design in the age of big data*. Information and Privacy Commissioner of Ontario, Canada.
- [2] Nawsher Khan, Ibrar Yaqoob, Ibrahim Abaker Targio Hashem, Zakira Inayat, Waleed Kamaleldin Mahmoud Ali, Muhammad Alam, Muhammad Shiraz, and Abdullah Gani. 2014. Big data: survey, technologies, opportunities, and challenges. *The Scientific World Journal* 2014 (2014).
- [3] Joachim Roski, George W Bo-Linn, and Timothy A Andrews. 2014. Creating value in health care through big data: opportunities and policy implications. *Health affairs* 33, 7 (2014), 1115–1122.
- [4] Omer Tene and Jules Polonetsky. 2012. Big data for all: Privacy and user control in the age of analytics. *Nw. J. Tech. & Intell. Prop.* 11 (2012), xxvii.
- [5] J Van Den Bos, K Rustagi, T Gray, M Halford, E Zeimkiewicz, and J Shreve. 2011. Health affairs: At the intersection of health, health care and policy. *Health Affairs* 30 (2011), 596–603.

Bigdata in Clinical Trails

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ABSTRACT

This paper provides a sample of a \LaTeX document which conforms, somewhat loosely, to the formatting guidelines for ACM SIG Proceedings.

KEYWORDS

i523

1 INTRODUCTION

The *proceedings* are the records of a conference. ACM seeks to give these conference by-products a uniform, high-quality appearance. To do this, ACM has some rigid requirements for the format of the proceedings documents: there is a specified format (balanced double columns), a specified set of fonts (Arial or Helvetica and Times Roman) in certain specified sizes, a specified live area, centered on the page, specified size of margins, specified column width and gutter size [1].

ACKNOWLEDGMENTS

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- [1] Ian Editor (Ed.). 2007. *The title of book one* (1st. ed.). The name of the series one, Vol. 9. University of Chicago Press, Chicago. <https://doi.org/10.1007/3-540-09237-4>

My great Big Dat Paper

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Big Data Applications In Population Health Management

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ABSTRACT

My abstract will go here

KEYWORDS

ACM proceedings, L^AT_EX, text tagging

1 INTRODUCTION

My introduction will go here [1].

ACKNOWLEDGMENTS

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My great Big Dat Paper

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ABSTRACT

This paper

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ACM proceedings, \LaTeX , text tagging

1 INTRODUCTION

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2 THE BODY OF THE PAPER

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3 CONCLUSIONS

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REFERENCES

- [1] Matthew Van Gundy, Davide Balzarotti, and Giovanni Vigna. 2009. Catch me, if you can: Evading network signatures with web-based polymorphic worms. In *Proceedings of the first USENIX workshop on Offensive Technologies (WOOT '09)*. USENIX Association, Berkley, CA, 90–100.

Amazon Web Services (AWS) in Support of Big Data and Analytics

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ABSTRACT

This paper will explore the logistics of Amazon Web Services and how companies are currently utilizing the service to process their big data needs.

KEYWORDS

Big Data, Cloud Computing, AWS, Big Data Analytics

1 INTRODUCTION

Amazon Web Services (AWS), the cloud service arm of Amazon, is currently the most dominant company in the cloud computing marketplace. With a market share of 31%, AWS holds a larger share than the next three closest competitors (Google, Microsoft and IBM)[1]. As a \$10 billion a year line of business for Amazon, the revenue stream is incredibly diversified across multiple product offerings. One of these categories, which can broadly be described as ‘business analytics,’ have helped companies gain new insights into their customer experiences and competitive landscape.

REFERENCES

- [1] Synergy Research Group. 2016. AWS Remains Dominant Despite Microsoft and Google Growth Surges. Website. (Feb. 2016).

Big Data Analytics: Recommendation Systems on the Web

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ABSTRACT

This paper is an overview of Recommendation Systems in eCommerce.

KEYWORDS

Recommendation Systems

1 INTRODUCTION

Recommendation systems (RS) are leveraging big data in ways that create value both business and customer. "The goal of a recommender system is to generate meaningful recommendations to a collection of users for items or products that might interest them" [5]. RS is beneficial to businesses and customers by increasing metrics such as revenue and customer satisfaction [2]. This paper aims to review RS and how it is being used in online platforms. Topics covered will include current RS techniques, companies currently using RS, and limitations.

2 RECOMMENDATION TECHNIQUES

Three common RS techniques would include content-based, collaborative, and hybrid recommendations [1]. The best technique depends on what recommendations need to be made, and the data used to make them. Many times, the hybrid approach is used because there can be limitations with other approaches [1].

2.1 Content-Based

Content-Based RS recommend items to users by using descriptions of items and how the user is profiled based on their interest [6]. Items are classified by different characteristics, attributes, or variables [6]. Once items are classified, they can be grouped together based on their characteristics. Users are classified by information they provide to the system, and/or data collected by interacting with the system.

Content-Based RS are commonly seen on web applications and E-commerce sites. These types of systems can easily track and monitor almost all user activities. Usually a user has an account with the system, where information was voluntarily provided. With this data, users can be classified easier compared to a customer walking into a brick and mortar business.

2.2 Collaborative Filtering

"Collaborative Filtering is the process of filtering or evaluating items using the opinions of other people" [7]. This type of RS is commonly seen on systems where an item can be rated by a user. User ratings are collected from a user, and then compared to other users. For example, person A buys items 1 and 2 and rates each item highly. Then, person B buys item 1 and rates it highly. Since person A and B both bought and rated item 1 highly, the system would likely recommend item 2 to person B. On the contrary, if

person B gave item 1 a low rating, the system would not likely recommend item 2 to person B.

2.3 Hybrid

Hybrid RS combines two or more techniques and combines them to improve performance and reduce limitations that a single technique might have [3]. In most cases, collaborative filtering is used with one or more of the other techniques to improve performance. There are many different approaches when combining techniques, but the details of each are out of the scope of this paper. The main point to take away is that RS is flexible with its techniques and implementation. The right hybrid technique will depend on the business case.

An example of a hybrid approach would use collaborative filtering and the content-based methods described above. Items could be recommended to a user based on their interest using the content-based approach. Then from that group of recommended items, collaborative filtering could be used to filter items by ratings.

3 MODERN SYSTEMS

Two well known companies that are currently using RS with their big data are Netflix and Amazon. These two companies use data from their large customer base to make predictions and recommendations.

3.1 Netflix

Netflix is an internet based company that offers a variety of movies and television shows. Netflix had a problem of customers sorting through its large selection of movies and shows, and eventually losing interest which resulted in abandonment of their services [4]. Over the years, Netflix has created and continually developed new RS algorithms which they claim saves them more than one billion dollars per year and a monthly turnover in the low double digits [4]. Netflix is getting the most of their business with the help of RS.

3.2 Amazon

4 LIMITATIONS TO THE FUTURE

4.1 Cross-Domain Recommendations

4.2 Cold Start Problem

ACKNOWLEDGMENTS

The authors would like to thank

REFERENCES

- [1] Gediminas Adomavicius and Alexander Tuzhilin. 2005. Toward the Next Generation of Recommender Systems: A Survey of the State-of-the-Art and Possible Extensions. *IEEE Trans. on Knowl. and Data Eng.* 17, 6 (June 2005), 734–749. <https://doi.org/10.1109/TKDE.2005.99>
- [2] Xavier Amatriain and Justin Basilico. 2016. Past, Present, and Future of Recommender Systems: An Industry Perspective. In *Proceedings of the 10th ACM*

- Conference on Recommender Systems (RecSys '16)*. ACM, New York, NY, USA, 211–214. <https://doi.org/10.1145/2959100.2959144>
- [3] Robin Burke. 2002. Hybrid Recommender Systems: Survey and Experiments. *User Modeling and User-Adapted Interaction* 12, 4 (01 Nov 2002), 331–370. <https://doi.org/10.1023/A:1021240730564>
 - [4] Carlos A. Gomez-Urbe and Neil Hunt. 2015. The Netflix Recommender System: Algorithms, Business Value, and Innovation. *ACM Trans. Manage. Inf. Syst.* 6, 4, Article 13 (Dec. 2015), 19 pages. <https://doi.org/10.1145/2843948>
 - [5] Prem Melville and Vikas Sindhwani. 2010. *Recommender Systems*. Springer US, Boston, MA, 829–838. https://doi.org/10.1007/978-0-387-30164-8_705
 - [6] Michael J. Pazzani and Daniel Billsus. 2007. *Content-Based Recommendation Systems*. Springer Berlin Heidelberg, Berlin, Heidelberg, 325–341. https://doi.org/10.1007/978-3-540-72079-9_10
 - [7] J. Ben Schafer, Dan Frankowski, Jon Herlocker, and Shilad Sen. 2007. *Collaborative Filtering Recommender Systems*. Springer Berlin Heidelberg, Berlin, Heidelberg, 291–324. https://doi.org/10.1007/978-3-540-72079-9_9

Docker in support of Big Data Applications and Analytics

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ABSTRACT

This paper will analyze the processing power of docker with big data use cases

KEYWORDS

i523

1 INTRODUCTION

ACKNOWLEDGMENTS

Big Data Analytics for Research Libraries and Archives

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ABSTRACT

Research libraries and archives have played a longstanding role in information management and access. In the second half of the twentieth century, libraries were at the forefront of automation and networked access to information. Since the advent of the internet, however, they have failed to keep pace with technological advances and now face serious challenges in serving the evolving needs of researchers, which are increasingly focused on solutions for preserving and processing large amounts of data. To remain relevant in the current information landscape, libraries and archives must implement new strategies for converting legacy data to formats that can add value to the research lifecycle.

KEYWORDS

Libraries, Archives, Data Management, Data Integration, ETL

1 INTRODUCTION

Examples of big data analytics in research libraries and archives are still scarce. In the library domain, the leading data hub is the Online Computer Library Center (OCLC)[1].

2 CONCLUSION

Conclusions and abstracts must not have any citations in the section.

ACKNOWLEDGMENTS

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REFERENCES

- [1] M. Teets and M. Goldner. 2013. Libraries' Role in Curating and Exposing Big Data. *Future Internet* 5 (2013), 429–438. <https://doi.org/10.3390/fi5030429>

Big Data in NCAA Football

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ABSTRACT

This paper provides an overview of applications of big data in NCAA football.

KEYWORDS

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1 INTRODUCTION

National Collegiate Athletics Association (NCAA) football is one of the most widely watched sports in the United States. The size of the fan base and the profits that can be derived from televised games incentivizes universities and other interested parties to invest in the application of big data analytics and data science methods in general to improve on-field outcomes by enabling better management of player well-being and performance. The purpose of this paper is to provide an overview of the use of data science in National Collegiate Athletics Association (NCAA) football. Recent research on the use of data science to improve various aspects of NCAA football will be surveyed, while current trends and their implications will be discussed.

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Big Data Applications in Self-Driving Cars

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ABSTRACT

This paper provides a sample of a \LaTeX document which conforms, somewhat loosely, to the formatting guidelines for ACM SIG Proceedings.

KEYWORDS

ACM proceedings, \LaTeX , text tagging

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The *proceedings* are the records of a conference. ACM seeks to give these conference by-products a uniform, high-quality appearance. To do this, ACM has some rigid requirements for the format of the proceedings documents: there is a specified format (balanced double columns), a specified set of fonts (Arial or Helvetica and Times Roman) in certain specified sizes, a specified live area, centered on the page, specified size of margins, specified column width and gutter size [1].

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My great Big Dat Paper

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