

# IEEE Citation Style



## *Library Quick Guide*

Adapted from the 2019 *IEEE Editorial Style Manual for Authors*, the 2018 *IEEE Reference Guide*, and Murdoch University's *IEEE Style Online Subject Guide*.

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IEEE is the documentation style used primarily for reports in the following fields: engineering, electronics, telecommunications, computer science, and information technology.

IEEE style requires a notational reference method when referring to sources of information. In-text citations consists of placing a number in square brackets in line with the text of the source. The citations are then numbered in order of their appearance and are also located at the end of the work, in the form of a reference list. The reference list is organized sequentially to correlate with the numbered citations introduced in-text. Each reference will consist of specific descriptive elements (e.g. publication information) to ensure that sufficient information is available to identify and locate the source.

This guide provides an overview, with the most common citation examples in the IEEE style. For further information and examples, please refer to the *IEEE Editorial Style Manual for Authors*, the *IEEE Reference Guide*, and the IEEE website.

### **References**

#### Reference List

The Reference List provides complete details of all sources referenced in a paper. References include three main components: The author's name is listed as the initial of the first name and full last name, title of the article, chapter, patent, etc. in quotation marks, and title of the journal or book in italics.

#### Formatting References

- Placed at the end of a work.
- Entries are single spaced, but a double space is placed between entries.
- Set all reference numbers flush left (in a column of their own) and enclosed in their individual square brackets.
- Entries must be arranged numerically, by the allotted citation listed in-text
- Indent the text of entries.
- Capitalize the first word of the article or chapter, with the exception of proper nouns and element symbols.
- Capitalize all major words in the title of the book or journal.
- Quotation marks are placed around titles of sources held within another source.
  - E.g. articles or chapters
- Titles of the main or stand-alone source are *italicized*.
  - E.g. journals, reference books, or reports

- For six (6) or more authors, use et al. following the first author listed.
  - E.g. Wood et al. [7]
- The given name of the author or editor is changed to the initial only and precedes the last name.
- Place a space following authors' initials.
- Commas are used around Jr., Sr., and III in names.
- Include a reference's URL at the end of the citation.
- If the URL is longer than one line in length, you may break the URL after a slash or double slash (//) or before a hyphen (-), a tilde (~), an underline (\_), a question mark (?), or a percent symbol (%). You may break an URL before or after an equals sign (=), an ampersand (&), or an "at" symbol (@).
- When citing a section within a book, state the relevant page numbers.

### In-Text Citations

In-text citations are means of acknowledging that words or ideas summarized, paraphrased, or presented in direct quotations are from other sources of information and not your own. Citing information using square brackets within the text enables readers to easily identify a more detailed entry of the source in the Reference List.

- When citing references in text, the reference appears in line with the text using square brackets.
  - E.g. [13]
- A space is placed prior to the square bracket.
- Sentence punctuation occurs following the brackets.
- Using square brackets, consecutively number each new citation as they appear in text.
- In sentences, refer to a source by the reference number only. Do not use Ref. [2], except at the beginning of a sentence.
  - E.g. "McLean and Lincoln [1] argue...", "Reference [2] demonstrates...", "In [3] ...", "Recent studies [1] and [4] indicate...", "For example, see [5]."
- Include page numbers, sections, chapters, etc. when citing direct quotations as well as when referencing chapters and journal articles.
- Use the same number for all subsequent references. If a source is referenced with different page numbers or a different reference within a source is used, include the identifier(s) following the reference number in square brackets.
  - E.g. [2, pp. 15-20], [2, Ch. 10, p. 256], [2, Fig. 3], or [2, Sec. 4.5]
- When citing more than one reference at a time, individually list each reference in square brackets and separate with a comma or a dash.
  - E.g. "As demonstrated by Brown [2], [5]."; "...according to [3] and [5] - [7]"
- When citing in-text, it is not required to distinguish between print and electronic formats.

\*Note: IEEE style does not permit the use of secondary sources. Do not use the original source as a reference if it cannot be located.

**For additional information on references and in-text citations, consult pages 3 and 17 in the *IEEE Reference Guide* and pages 10-12 in the *IEEE Editorial Style Manual for Authors*.**

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**General Format (pp. 3, 9-11, and 21 in *IEEE Editorial Style Manual for Authors* and p. 3 in the *IEEE Reference Guide*)**

- Required Sections of an IEEE paper are Introduction, Methods and Procedures, Results, Conclusions, and References.
- There are four levels of text section headings:
  - *Primary headings* (section) should be enumerated using roman numerals (“IV”) followed by periods. They are centered above the text, set in 10-pt. and 8-pt. caps.
  - *Secondary headings* (subsect1) are enumerated using capital letters (“A.”) followed by periods. They are flush left, set in italics, and in headline style.
  - *Tertiary headings* (subsect2) are enumerated using Arabic numerals (“2”) followed by parentheses. They are indented one em (two spaces), set in italics, in headline style, and flow into the text of their section, and are followed by a colon.
  - *Quarternary headings* (subsect3) are the same as the tertiary headings, with the exception of being indented two ems (4 spaces), and have lower case enumerations, and only the first letter of the heading is capitalized.
  - References are not enumerated.
  - Appendix headings may use either Roman numerals or capital letters for enumeration that follows the term Appendix.
    - E.g.

I. INTRODUCTION

A. *Title*

1) *Subtitle*

a) *Subtitle*

II. METHODS AND PROCEDURES

REFERENCES

APPENDIX I

- The title page consists of paper title, byline, and running head.
- The abstract must be one paragraph in length, between 150-250 words. The abstract is in 8 point font boldface type, while all variables appear in lightface italic. Do not include numbered references or mathematical equations.
- Title of paper is set to 16-pt. font.
- The byline is centered and placed below the title of the paper. Name is written in full as follows: First Name Middle Initial. Last Name.
- Format the paper to contain two columns per page.
- There are two types of running heads (Issue Running Heads and Author Running Heads); use Author Running Heads.
- Running heads are in full capitals, in 7-pt. font, and cannot exceed one line.
- The running head must consist of the last name of author(s) followed by a colon, a space, and a brief title of the paper (use only the most important words or a critical phrase).
- Place title of paper in “headline style”, where all major words and any prepositions of three letters or longer are capitalized. Do not capitalize unit abbreviations or acronyms.
  - E.g. Nonlinear Gain Coefficients in Semiconductor Lasers: Effects of Carrier Heating

- When formatting, ensure that spacing is 18 pts between text and footnotes or figures, 6 pts spacing above and below equations and lists, 12 pts above primary heads, and a minimum of 6 pts above secondary heads.
- Center all required sections and place in all caps.
- Insert a Roman numeral prior to each required section, follow with a period and an em space (two spaces).
- Set the first letter of the Introduction as an initial cap (a drop cap). Following the cap, the next 8-12 characters are capitalized.
  - E.g. **T**HIS IS a citation guide for IEEE style.

### Figures and Tables (pp. 12-13 and 21 in *IEEE Editorial Style Manual for Authors*)

The formatting of graphics, including figures and tables should be one column wide (3 ½ inches) or two column width (7 1/16 inches). Avoid sizing any graphic less than one column wide. Large graphics may span both columns. Ensure that figures and tables progress vertically, not horizontally. Place figures and tables as close to their first mention as possible; it is preferable that they are placed following the mention.

#### Figures (p. 12)

- When using or referencing a figure, it is abbreviated as “Fig.”, even at the beginning of a sentence. When formatting “Fig.” place a period following the figure’s number. An em space (two spaces) is placed prior to the caption. The first word of the caption must be capitalized.
  - E.g. Fig. 1. Magnetization
- Place figure captions below the figures.
- If a figure has two parts, label (a) and (b).
- Units must be placed in parentheses.
  - E.g. Fig. 1. Magnetization (A/m)
- The axis labels of figures require words, not only symbols. Axes should not be labelled with a ratio of quantities and/or units.
  - E.g. Fig. 1. Magnetization *M*
- Labels must be legible, and in 8 to 12 point font.

#### Tables (p. 13)

- Tables are numbered with Roman numerals.
- Do not abbreviate “Table”.
- Format the term Table by placing it in all caps, centered, and in 8-pt. font.
  - E.g. TABLE I
- Table captions are written in small caps, placed above the tables and below the table number.
- Do not place a period at the end of the descriptive text of the table caption, even if punctuation is required within the caption.
  - E.g. **TABLE I**  
MAGNETIZATION PROPERTIES

### **Lists (pp. 14-15 in *IEEE Editorial Style Manual for Authors*)**

- When creating lists, refer to the three types of lists permissible in IEEE style.
  - *Run-In Lists* are lists that run in with the text. Introduce this type of list by using a colon. The items must have parallel construction and are separated by semicolons.
  - *Displayed Lists* consist of either incomplete or full sentence items.
    - Incomplete sentence items are grammatically parallel, very short, and contain a few items. Introduce the items with a colon, begin the entry with a lower case letter, use semicolons between items, and finish the list with a period. If there are less than three items or are not mentioned in text, format the list similar to the run-in lists.
    - Full Sentence items are lists with full explanations. The items are introduced by a sentence that ends with a period, not a colon. All items are numbered, and each entry begins with a capital letter and ends with a period.
  - *Where Lists* are lists that define variables in equations preceding a list.
- When labeling lists, use Roman case and in single parenthesis.
- The order for lists consists of 1), 2), 3) followed by a), b), c), and then i), ii), iii). The respective indentation is 1 em, 2 em, and 3 ems.

### **Math and Equations (pp. 20-21 in *IEEE Editorial Style Manual for Authors*)**

- When writing equations, consider grammar as all equations should read like a sentence.
- A period is the only punctuation that should be placed at the end of equations.
- Number equations within a paper consecutively.
- Add a zero before but not after a decimal.
- Units must be spelled out in text if there is no associated quantity. If a unit appears with quantities, use the standard abbreviation (see pp. 49-52).
- In multiline equations, avoid breaking the equations between lines in text.
- Set functions and operators always in Roman font.

### **Grammar and Spelling (pp. 18-20 and 22-23 in *IEEE Editorial Style Manual for Authors*)**

- Use colon (:) after words such as “following” or “as follows”.
- At the end of introductory sentences place a comma (e.g., i.e., hence).
- Do not use punctuation after forms of verb to be, or between a verb and its object or a preposition and its object.
- In a series of three or more terms, use a comma prior to the coordinating conjunction (and, or, or nor).
- Do not use apostrophes in acronyms or numerical plurals.
  - E.g. 1970s
- For guidance on grammar and usage not covered in this guide, the IEEE Reference Guide, or the IEEE Editorial Style Manual consult the Chicago Manual of Style call number: PN 149 C54 2017

### **Abbreviations (pp. 18-40 in the *IEEE Reference Guide*)**

- Abbreviations and acronyms must be defined the first time they are used in text (not including the abstract).
- Abbreviations should be capitalized, including those that are otherwise lowercase (excluding unit abbreviations and acronyms).
- Abbreviations that incorporate periods should not have spaces following the periods.
  - E.g. i.i.d. (independent identically distributed)

- Do not use abbreviations in a title, unless they are unavoidable.
- See the extensive list of abbreviations in the *IEEE Reference Guide* for common abbreviations of words in references, publishers, and periodicals.

## PRINT DOCUMENTS

### Source: Books

Basic Format:

[#] A. A. Author, "Title of chapter in the book," in *Title of Book*, xth ed. City of Publisher, (include U.S. State only), Country: Publisher, year of publication, ch. X, sec. x, pp. xx-xx.

IEEE Ref. Manual	Source	Reference List	In-Text Citation
pp. 3-4	Book: 1 author	[1] D.C. Youla, <i>Theory and Synthesis of Linear Passive Time-Invariant Networks</i> , Cambridge, United Kingdom: Cambridge University Press, 2015.	[1]
pp. 4-5	Chapter, article or essay (in an edited collection): 3 authors	[2] M. Merhpouya, H. Lavvafi, and A. Darafsheh, "Microstructural characterization and mechanical reliability of laser-machined structures," in <i>Advances in Laser Materials Processing: Technology, Research and Applications</i> , 2 <sup>nd</sup> ed., J. Lawrence, Ed. Duxford, United Kingdom: Woodhead Publishing, 2018, ch. 25, pp. 731-761.	[2]

### Source: Periodicals (print)

Basic Format:

[#] A. A. Author, "Name of paper," *Abbrev. Title of Periodical*, vol. x, no. x, pp. xx-xx, Abbrev. Month, Year.

IEEE Ref. Manual	Source	Reference List	In-Text Citation
pp. 11-12	Journal Article: 1 author	[3] L. Corry. "Turing's pre-war analog computers: The fatherhood of the modern computer revisited," in <i>Communications of the ACM</i> , vol. 60, no. 8, pp. 50-58, Aug. 2017.	[3]
pp. 11-12	Magazine: 1 author	[4] A. Bejan. "Without engineering, civilization does not exist," in <i>Mechanical Engineering</i> , vol. 140, no. 5, pp. 42-47, May 2018.	[4]

### Source: Scientific/Technical Reports

Basic Format:

[#] A. A. Author, "Title of report," Abbrev. Name of Company, City of Company, Abbrev. State, Country, Report xxx, Abbrev. Month Day, Year.

IEEE Ref. Manual	Source	Reference List	In-Text Citation
p. 14	Report: 1 author	[5] D. Dagel, G. Grossetete, and D.O. Maccallum, "Measurement of laser weld temperatures for 3D model input," Sandia National Lab, Albuquerque, NM, USA,	[5]

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		Contract AC04-94AL85000, Tech. Rep. SAND2016-10703, 648545, Oct. 1, 2016.	
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### Source: Manual or Handbook

Basic Format:

[#] *Name of Manual or Handbook*, x ed., Abbrev. Name of Co., City of Co., Abbrev. State, year, pp. xx-xx.

IEEE Ref. Manual	Source	Reference List	In-Text Citation
pp. 9-10	Manual or Handbook	[6] <i>E420 Manual</i> , Easy-Laser AB, Mölndal, Sweden, 2016.	[6]

### Source: Patents

Basic Format:

[#] A. A. Author, "Title of patent," U.S. Patent x xxx xxx, Abbrev. Month, day, year.

IEEE Ref. Manual	Source	Reference List	In-Text Citation
p. 11	Patent	[7] H.O. Teichmann, "Coding of laser fibers," U.S. Patent 8 659 386, Feb. 25, 2014.	[7]

### Source: Unpublished

Basic Format:

[#] A. A. Author, private communication, Abbrev. Month, year.

IEEE Ref. Manual	Source	Reference List	In-Text Citation
p. 16	Private communication	[8] T.J. Wickens, private communication, Jul. 2018.	[8]

### Source: Standards

Basic Format:

[#] *Title of Standard*, Standard number, date.

IEEE Ref. Manual	Source	Reference List	In-Text Citation
p. 15	Standard	[9] <i>Requirements and Guidelines for Test Methods Specifications and Test Method Implementations for Measuring Conformance to POSIX® Standards</i> , IEEE Standard 13210, 1999.	[9]

## ELECTRONIC DOCUMENTS

### Source: eBooks

Basic Format:

[#] A. A. Author, "Title of chapter in the book," in *Title of Book*, xth ed. City of Publisher, (include U.S. State only), Country: Publisher, year of publication, ch. X, sec. x, pp. xx-xx. [Online]. Available: <http://www.website.com>.

IEEE Ref. Manual	Source	Reference List	In-Text Citation
pp. 4-5	Edited E-book or editor as author	[10] B. Pradhan, Ed., <i>Laser Scanning Applications in Landslide Assessment</i> . Cham, Switzerland: Springer International Publishing, 2017. [E-book]. Available: Springer Link.	[10]
pp. 4, 8, 9, 16, & 17	Reference work: Online entry (with author)	[11] C. A. Ericson, II, "Engineering development model," in <i>Concise Encyclopedia of System Safety: Definition of Terms and Concepts</i> . Hoboken, N. J.: Wiley, 2011. [E-book]. Available: Ebscohost eBook Collection.	[11]
pp. 4, 8, 9, 16, & 17	Reference work: Online entry (with no author)	[12] "Computer science," in <i>Computer Desktop Encyclopedia</i> . The Computer Language Company, 2017. Accessed May 4, 2018. [Online]. Available: Science Reference Center, <a href="https://www.ebsco.com/products/research-databases/science-reference-center">https://www.ebsco.com/products/research-databases/science-reference-center</a>	[12]

### Source: Periodicals (online)

Basic Format:

[#] A. A. Author, "Title of article," *Abbrev. Title of Periodical*, vol. x, no. x, pp. xx-xx, Abbrev. Month year. Accessed: Month Day, Year. [Online]. Available: <http://www.website.com>

or

[#] A. A. Author, "Title of article," *Abbrev. Title of Periodical*, vol. x., no. x, pp. xxx-xxx, Abbrev. Month year, doi: xxx.

or

[#] A. A. Author, "Title of article," *Abbrev. Title of Periodical*, vol. x, no. x, pp. xx-xx, Abbrev. Month year. Accessed: Month Day, Year. [Online]. Available: Database Name, <http://www.website.com>

\*When formatting/including an accessed date within a reference, the placement must match how it is presented in the published article. See page 17 of the *IEEE Reference Guide* for more information.

IEEE Ref. Manual	Source	Reference List	In-Text Citation
pp. 13 & 17	Magazine Article (from website): 1 author	[13] P. Munoz, "Visible laser diodes: How are green laser diodes changing biomedical diagnostics?" <i>Laser Focus World</i> , vol. 54, no. 3, pp. 47-50, Mar. 2018. Accessed Apr. 24, 2018. [Online]. Available: <a href="https://www.laserfocusworld.com/articles/print/volume-54/issue-03/features/visible-laser-diodes-how-are-green-laser-diodes-changing-biomedical-diagnostics.html">https://www.laserfocusworld.com/articles/print/volume-54/issue-03/features/visible-laser-diodes-how-are-green-laser-diodes-changing-biomedical-diagnostics.html</a>	[13]
pp. 12-13 & 17	Journal Article (with DOI): 2 authors	[14] L. Sobotova and M. Badida, "New possibilities of environmentally friendly cleaning method by laser technology," <i>Advances in Science and Technology</i>	[14]

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		<i>Research Journal</i> , vol. 10, no. 32, pp. 224-229, 2016, doi: 10.12913/22998624/65695.	
pp. 12-13 & 17	Journal Article (from database): 3 or more authors	[15] O. V. Semyachkina-Glushkovskaya, et al., "Blood-brain barrier and laser technology for drug brain delivery," <i>Journal of Innovative Optical Health Sciences</i> , vol. 10, no. 5, pp. 1-12, Sept. 2017. [Online]. Available: Academic Search Complete, <a href="https://www.ebsco.com/products/research-databases/academic-search-complete">https://www.ebsco.com/products/research-databases/academic-search-complete</a>	[15]

### Source: Reports (online)

Basic Format:

[#] A. A. Author, "Title of report," Abbrev. Name of Company, City of Company, Abbrev. State, Country, Report no., (optional: vol., no.,) Abbrev. Month Day, Year. Accessed: Abbrev. Month Day, Year. [Online]. Available: URL

IEEE Ref. Manual	Source	Reference List	In-Text Citation
p. 14	Reports	[16] K. Germaschewski, W. Fox, A. Bhattacharjee, "Final technical report: Magnetic reconnection in high-energy laser-produced plasmas," Univ. New Hampshire, Durham, NH, USA, Tech. Rep. DOE-UNH-7168, Apr. 6, 2017. Accessed Jun. 5, 2018. [Online]. Available: <a href="https://www.osti.gov/biblio/1349850">https://www.osti.gov/biblio/1349850</a>	[16]

### Source: Patents/Standards (online)

Basic Format:

[#] Name of the invention, by A. A. Author. (Year, Abbrev. Month Day). Patent Number [Type of medium]. Available: URL

IEEE Ref. Manual	Source	Reference List	In-Text Citation
pp. 11 and 15	Patent (online)	[17] Laser system, by M. Sugawara, M. Usami, and T. Akiyama. (2013, Mar. 15). <i>Patent 8 896 911</i> [Online]. Available: USPTO Patent Grants, <a href="http://patft1.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&amp;Sect2=HITOFF&amp;d=PALL&amp;p=1&amp;u=%2Fnetahtml%2FPTO%2Fsrchnum.htm&amp;r=1&amp;f=G&amp;l=50&amp;s1=8,896,911.PN.&amp;OS=PN/8,896,911&amp;RS=PN/8,896,911">http://patft1.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&amp;Sect2=HITOFF&amp;d=PALL&amp;p=1&amp;u=%2Fnetahtml%2FPTO%2Fsrchnum.htm&amp;r=1&amp;f=G&amp;l=50&amp;s1=8,896,911.PN.&amp;OS=PN/8,896,911&amp;RS=PN/8,896,911</a>	[17]

### Source: Website

Basic Format:

[#] A. A. Author, "Title of webpage," *Name of Website*. Available: <http://www.website.com>. [Accessed Abbrev. Month Day, Year].

IEEE Ref. Manual	Source	Reference List	In-Text Citation
pp. 16-17	Website: Single page (corporate author)	[18] Engineers Canada, "Climate change and engineering," <i>Engineers Canada</i> . Available <a href="https://engineerscanada.ca/public-policy/climate-change-and-engineering">https://engineerscanada.ca/public-policy/climate-change-and-engineering</a> . [Accessed Jun. 20, 2018].	[18]

pp. 16-17	Website : Single page (author)	[19] J. Deal, "Thinking fast and estimating wrong," <i>The Zapier Engineering Blog</i> . Available: <a href="https://zapier.com/engineering/estimating/">https://zapier.com/engineering/estimating/</a> . [Accessed Mar. 13, 2018].	[19]
pp. 16-17	Entire website	[20] Apega, <i>The Association of Professional Engineers and Geoscientists of Alberta</i> . Available: <a href="https://www.apega.ca/">https://www.apega.ca/</a> . [Accessed Jan. 10, 2018].	[20]

**Source: Videos (online)**

Basic Format:

[#] Video Owner/Creator (e.g. YouTube Handle), Location (if available). *Title of Video*. (Release date Abbrev. Month Day, Year). Accessed: Month Day, Year. [Online Video]. Available: URL

IEEE Ref. Manual	Source	Reference List	In-Text Citation
p. 8	Online Video	[21] Bill Nye. <i>Bill Nye The Science Guy on Energy</i> . (Apr. 8, 2009). Accessed: Oct. 1, 2019. [Online Video]. Available: <a href="https://youtube.com/watch?v=0ASLLiuejAo">https://youtube.com/watch?v=0ASLLiuejAo</a>	[21]
p. 8	Online Video	[22] IEEE Spectrum. <i>Self-Healing Robot Recovers from Damage</i> . (Oct. 1, 2019). Accessed: Oct. 2, 2019. [Online Video]. Available: <a href="https://www.youtube.com/watch?v=3NLYBGM9k7s">https://www.youtube.com/watch?v=3NLYBGM9k7s</a>	[22]

**COURSE-RELATED DOCUMENTS****Source: Coursepack**

Basic Format:

[#] A. A. Instructor. Title of Coursepack. (Year/Semester). Course Name. Institution location: Name of Institution.

IEEE Ref. Manual	Source	Reference List	In-Text Citation
p. 8	Coursepack	[8] Young, M. Contemporary Ethical Issues Coursepack. (2019/Fall). PHIL 250. Fort McMurray, Canada: Keyano College.	[23]

**Source: Lecture Notes**

Basic Format:

[#] A. A. Author. (Year). Title of lecture [Type of Medium]. Available: URL

IEEE Ref. Manual	Source	Reference List	In-Text Citation
p. 9	Lecture Notes	[8] S. Schmidt. (2019). Searching for Sources [PowerPoint slides].	[24]
pp. 9-10	Lecture Notes (online)	[8] L. Raymond. (2011). Setting Up Your Moodle Profile [Online]. Available: <a href="http://ilearn.keyano.ca/file.php/4082/Setting_Up_Your_Moodle_Profile.pdf">http://ilearn.keyano.ca/file.php/4082/Setting_Up_Your_Moodle_Profile.pdf</a>	[25]

## Sample Reference List

### Reference List

- [1] M. Merhpouya, H. Lavvafi, and A. Darafsheh, "Microstructural characterization and mechanical reliability of laser-machined structures," in *Advances in Laser Materials Processing: Technology, Research and Applications*, 2<sup>nd</sup> ed., J. Lawrence, Ed. Duxford, United Kingdom: Woodhead Publishing, 2018, ch. 25, pp. 731-761.
- [2] L. Corry. "Turing's pre-war analog computers: The fatherhood of the modern computer revisited," in *Communications of the ACM*, vol. 60, no. 8, pp. 50-58, Aug. 2017.
- [3] K. Germaschewski, W. Fox, A. Bhattacharjee, "Final technical report: Magnetic reconnection in high-energy laser-produced plasmas," Univ. New Hampshire, Durham, NH, USA, Tech. Rep. DOE-UNH-7168, Apr. 6, 2017. Accessed Jun. 5, 2018. [Online]. Available: <https://www.osti.gov/biblio/1349850>
- [4] J. Deal, "Thinking fast and estimating wrong," *The Zapier Engineering Blog*. Available: <https://zapier.com/engineering/estimating/>. [Accessed Mar. 13, 2018].
- [5] O. V. Semyachkina-Glushkovskaya, et al., "Blood-brain barrier and laser technology for drug brain delivery," *Journal of Innovative Optical Health Sciences*, vol. 10, no. 5, pp. 1-12, Sept. 2017. Accessed May 1, 2018. [Online]. Available: Academic Search Complete, <https://www.ebsco.com/products/research-databases/academic-search-complete>
- [6] L. Sobotova and M. Badida, "New possibilities of environmentally friendly cleaning method by laser technology," *Advances in Science and Technology Research Journal*, vol. 10, no. 32, pp. 224-229, 2016, doi: 10.12913/22998624/65695.
- [7] B. Pradhan, Ed., *Laser Scanning Applications in Landslide Assessment*. Cham, Switzerland: Springer International Publishing, 2017. [E-book]. Available: Springer Link.
- [8] H.O. Teichmann, "Coding of laser fibers," U.S. Patent 8 659 386, Feb. 25, 2014.
- [9] *Requirements and Guidelines for Test Methods Specifications and Test Method Implementations for Measuring Conformance to POSIX® Standards*, IEEE Standard 13210, 1999.
- [10] P. Munoz, "Visible laser diodes: How are green laser diodes changing biomedical diagnostics?" *Laser Focus World*, vol. 54, no. 3, pp. 47-50, Mar. 2018. Accessed Apr. 24, 2018. [Online]. Available: <https://www.laserfocusworld.com/articles/print/volume-54/issue-03/features/visible-laser-diodes-how-are-green-laser-diodes-changing-biomedical-diagnostics.html>
- [11] C. A. Ericson, II, "Engineering development model," in *Concise Encyclopedia of System Safety: Definition of Terms and Concepts*. Hoboken, N. J.: Wiley, 2011. [E-book]. Available: Ebscohost eBook Collection.