English Technical Writing

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Fall 2023 (112-1)
Class 7

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1

Feedback

2

2

Feedback

- Please fill out the feedback (even if I forget to say so)

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Connecting with Past Research




Work Time	Citations and References	Reference Managers	Assignment

4

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Work time

5

5

Look at with your partner

- How similar/different were the comments?
  - Number of comments
  - Content of comments
- Look at my replies to your partner's comments
  - Sometimes differences between their field and yours
- Make sure you understand
  - Begin to make corrections

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Frequent small problems

- Update assignment name each time
- Component markers should indicate general markers
  - Words that could be used in many papers
  - Not specific to the topic of that paper

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Citations

- Use the format found in your journals
- I used numeric format [1] in the examples
  - Suitable for IEEE (Electrical engineering)
- If your journals use (Author, Date) – use that

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Citations and References

Sections 7.1-2

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Goal today

- Learn how/where to add citations/references

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Published work = Accepted evidence

Section 7.1

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Accepted Evidence

"Why do we need evidence ?"

- Argument = Claim + Reasoning + Evidence

"Reliable ?"

Support

IEEE Advancing Technology for Humanity

Springer

ELSEVIER

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Citation vs. Reference

- Citation:
  - Marks in the text body
  - Directs reader to a reference
    - (author, date) [IMRD]

> Climate change, induced by anthropogenic greenhouse emissions, has been reported as one of the most critical threats to humanity (Raheem et al., 2018). Greenhouse emissions of which 68% is represented by CO_2 are described to be mainly as a result of the excessive fossil fuels use (Zhou et al., 2017a, b), a scenario that

    - numerical [IPTC]

> In 1954, Clavin designed a unidirectional antenna by using the idea of complementary antenna involving an electric dipole and a magnetic dipole [10]. Since then a number of unidirectional antennas were designed using this idea [11]–[15]. It is

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Citation vs. Reference

- Reference:
  - Listing at the end of the document
  - Complete info., e.g. author(s), title, publication info.

Author-date format

References

Abdel-Raouf, N., Al-Homaidan, A.A., Ibraheem, I.B.M., 2012. Microalgae and wastewater treatment. Saudi j. Biol. Sci. 19, 257–275.

Abu Bakar, N.S., Mohd Nasir, N., Lananan, F., Abdul Hamid, S.H., Lam, S.S., Jusoh, A., 2015. Optimization of C/N ratios for nutrient removal in aquaculture system culturing African catfish, (Clarias gariepinus) utilizing Bioflocs Technology. Int. Biodeter. Biodegrad. 102, 100–106.

Al Momani, F.A., Örmeci, B., 2014. Measurement of polyacrylamide polymers in water and wastewater using an in-line UV–vis spectrophotometer. J. Environ. Chem. Eng. 2, 765–772.

Al Momani, F., Gonzalez, O., Sans, C., Esplugas, S., 2004. Combining photo-Fenton process with biological sequencing batch reactor for 2,4-dichlorophenol degradation. Water Sci. Technol., 293–298.

Sort by alphabet [A→Z]

Numerical format

REFERENCES

[1] P. R. Foster, D. Martin, C. Parini, A. V. Räisänen, J. Ala-Laurinaho, T. Hirvonen, A. Lehto, T. Sehm, J. Tuovinen, F. Jensen, and K. Pontoppidan, "Mmwave Antenna Testing Techniques—Phase 2,", MAAS Rep. 304, ESTEC Contract/95/NL/PB(SC), 1996.

[2] A. D. Olver, "Compact antenna test ranges," in *Proc. Int. Conf. Antennas Propag. ICAP*. York, U.K., 1991, pp. 99–109.

[3] *IEEE Standard Test Procedure for Antennas*, IEEE Std. 149-1979, 1979.

[4] D. Yaghjian, "An overview of near-field antenna measurements," *IEEE Trans. Antennas Propag.*, vol. 34, no. 1, pp. 30–45, Jan. 1986.

[5] T. Hirvonen, J. Ala-Laurinaho, J. Tuovinen, and A. V. Räisänen, "A compact antenna test range based on a hologram," *IEEE Trans. Antennas Propag.*, vol. 45, no. 7, pp. 1270–1276, Jul. 1997.

Sort by number

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Categories of Past Research

Section 7.2.1

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Evaluate your understanding

1) How does the location of past research differ in IMRD and IPTC, and why?

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Use of Past Research

Past Research

- General Background Knowledge
- Definitions, Terminology or Notation
- Theoretical Frameworks, Models or Approaches
- Citation of Methods, Results or Conclusion from Past Research

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General Background Knowledge

- Considered to be true, accepted by field
  1. Written in present tense ✓
  2. Without citation ✓
  3. Not about new research presented in that article ✓
  4. Known and accepted by experienced researchers ✓
- Supports *Importance (Motivation)*

> I. INTRODUCTION
>
> THE measurement accuracy of a compact antenna test range (CATR) depends on the level of spurious signals. The level of any spurious signal should be about 10 dB below the side lobe level of the antenna under test (AUT), in order to measure the antenna pattern with an uncertainty of better than 3 dB. When

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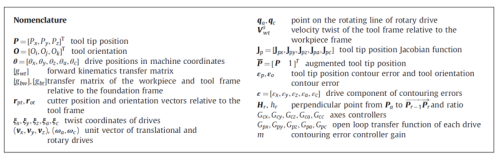
Definitions, Terminology or Notation

- Needed to understand current work
  - Definitions
  - Mathematical notation
  - Often presented as a list
- Supports *Framework (Foundation)*


Nomenclature

$\boldsymbol{P} = [P_x, P_y, P_z]^T$ tool tip position
$\boldsymbol{O} = [O_x, O_y, O_z]^T$ tool orientation
$\boldsymbol{\theta} = [\theta_1, \theta_2, \theta_3, \theta_4, \theta_5]$ drive positions in machine coordinates
$[g_{fm}]$ forward kinematics transfer matrix
$[g_{bw}]$,$[g_{ft}]$ transfer matrix of the workpiece and tool frame relative to the foundation frame
$\boldsymbol{r}_{pt}, \boldsymbol{r}_{ot}$ cutter position and orientation vectors relative to the tool frame
$\xi_x, \xi_y, \xi_z, \xi_\alpha, \xi_\beta, \xi_\gamma$ twist coordinates of drives
$(\boldsymbol{v}_x, \boldsymbol{v}_y, \boldsymbol{v}_z)$, $(\omega_\alpha, \omega_\beta)$ unit vector of translational and rotary drives
$\boldsymbol{q}_w, \boldsymbol{q}_t$ point on the rotating line of rotary drive
$\boldsymbol{V}_{wt}$ velocity twist of the tool frame relative to the workpiece frame
$\boldsymbol{J}_{\boldsymbol{P}} = [\boldsymbol{J}_{Px}, \boldsymbol{J}_{Py}, \boldsymbol{J}_{Pz}, \boldsymbol{J}_{P\alpha}, \boldsymbol{J}_{P\beta}]$ tool tip position Jacobian function
$\overline{\boldsymbol{P}} = [\boldsymbol{P} \quad 1]^T$ augmented tool tip position
$\epsilon_P, \epsilon_\theta$ tool tip position contour error and tool orientation contour error
$\boldsymbol{\epsilon} = [\epsilon_x, \epsilon_y, \epsilon_z, \epsilon_\alpha, \epsilon_\beta]$ drive component of contouring errors
$\boldsymbol{H}_c, h_c$ perpendicular point from $\boldsymbol{P}_a$ to $\overline{\boldsymbol{P}}_{c-1}\overline{\boldsymbol{P}}_c$ and ratio
$G_{cx}, G_{cy}, G_{cz}, G_{c\alpha}, G_{c\beta}$ axes controllers
$G_{px}, G_{py}, G_{pz}, G_{p\alpha}, G_{p\beta}$ open loop transfer function of each drive
m contouring error controller gain

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Theoretical Frameworks, Models or Approaches

- Needed to understand current work
  - Approaches, models, theoretical approaches
  - Specific background information
  - Anything except definitions and notations
- Supports *Framework (Foundation)*
  - Claim is implicit, seen by support, therefore hard to see
  - Maybe only one paragraph, subsection, or section

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Citation of Methods, Results or Conclusion from Past Research

- Numbered (or named) citations
- Easy to recognize
- Supports *many components*

THE conical spiral antenna (CSA) is one of the most popular frequency-independent antennas and it is widely used in space and satellite communications. The CSA was developed in [1]. Rumsey [1] introduced the angle principle, which states that the frequency-independent antenna is entirely defined by angles. Also, the truncation principle should be satisfied for practical antennas that must have an active region of finite size [2]. Dyson [3] provided comprehensive information for the CSA by performing a series of measurements. Yu and Mei [4], [5] analyzed the CSA using the method of moments. The properties of the CSA have been studied by many researchers [6]–[10].

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Past Research as Evidence

Section 7.2.2

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Evaluate your understanding

2) Which components tend to use past research as evidence, and why?

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Components and Citations

	Component	Necessary	Why
1	Motivation	☺ YES	This should be done
2	Necessity	☺ YES	This has not been done
3	Research Goal	☹ NO	We will do it
4	Foundation	☺ YES	Others have built a foundation
5	Research Detail	😐 MAYBE	This is our new building
6	Testing Method	😐 MAYBE	This is how we prove it is good
7	Data Patterns	☹ NO	This is our data
8	Comparisons	😐 MAYBE	This shows it is good/better
9	Interpretation	😐 MAYBE	This shows why it is better
10	Conclusion	☹ NO	We have done it

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IMRD vs IPTC

	Component	IMRD	IPTC
1	Importance (Motivation)	★★★★	★★
2	Need (Necessity)	★★	★★★★
3	Research Goal	-	-
4	Framework (Foundation)	★★	★★
5	Research Detail	★	★
6	Testing Method	★	★
7	Data Patterns	★	★
8	Comparisons	★	★★
9	Interpretation	★★	★
10	Conclusion	-	-

IMRD – Importance
IPTC – Related work

Connection with previous research

IMRD – Good explanation
IPTC – Better solution

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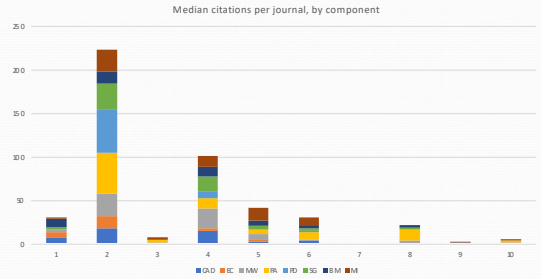
Citations in EE – Actual data



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Exemplar presentations

• Introduction	9/26	Neo
• Process/Method	10/3	Hai
• T&C / R&D	10/17	Charles
• Citations	10/24	Tran
• Graphics	10/31	Charleen

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Exercise 7.1

1) In your first exemplar, is there a separate section for definitions, related work or theoretical framework? Is the title general or specific?

2) Is accepted knowledge ever mentioned without citation (background, definitions, framework) and if so where?

**3) Where are the citations in your exemplars? What components do they seem to support?

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Reference Managers
Endnote

Section 25.3

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Reference formats

- Look at the file 'Reference styles'
- How many differences can you find?
  - Number format
  - Author names
  - Date of publication
  - Article title
  - Journal name
  - Journal details (volume/number/pages)
  - Other

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Use placeholders while writing

- Particularly in engineering
  - Final: Citations [1], numbered sequentially in document
  - While writing: Use placeholders in (author, date) format

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Advantages of placeholders

1. Become familiar with important works in your field.
2. Eliminate confusion from changing numbers.
3. Eliminate distraction of entering references.
4. Reduce complexity and chance of errors.

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Why use reference managers

- Link all your PDFs in one place
- Numbers update automatically in document
- Easy to use references in other papers

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Word vs. Reference managers

MS Word	Reference managers
• Part of program	• Separate program
• Integrated	• Add-on (semi-integrated)
• Limited output formats	• Thousands of formats
• Cannot download to program	• Download references
• Cannot link pdf	• Link and mark pdf

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Endnote

1. Endnote
- Create New Library

2. Google Scholar
- Search reference
- Citation
- Download to Endnote

3. Endnote
- Check reference, correct
- Attach pdf
- Format reference

4. Word
- Endnote tab
- Insert citation

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Assignment

(Component Analysis)

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1 Turn in

- Component analysis
- Corrected version of: (last week's assignment)
  - Overall structure
  - Introduction
  - Process/Methods
  - Testing & Conclusion/Results & Discussion
  - References
- Do NOT include this week's work (Citations)
- Details on Ecourse assignment/Rubrics

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2 Bring

- Homework with comments
- Add this week's work:
  - Exercise 7.1 (location of past research)
  - Use a reference manager to input citations, references

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3 Read

- Chapter 8 (8.1-8.5)
  - If your work involves statistics, read 8.6
  - NOT 8.7 (Advanced class)
- Chapter 24 (24.3)
  - Other sections optional

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Exemplar presentations

Introduction	9/26	Neo
Process/Method	10/3	Hai
T&C / R&D	10/17	Charles
Citations	10/24	Tran
Graphics	10/31	Charleen

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Description of Exemplar Articles

(Due in 2 weeks)

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Complete description

- Component analysis plus:
  - Citations by component
  - Graphics by division
  - Citations and references in reference manager

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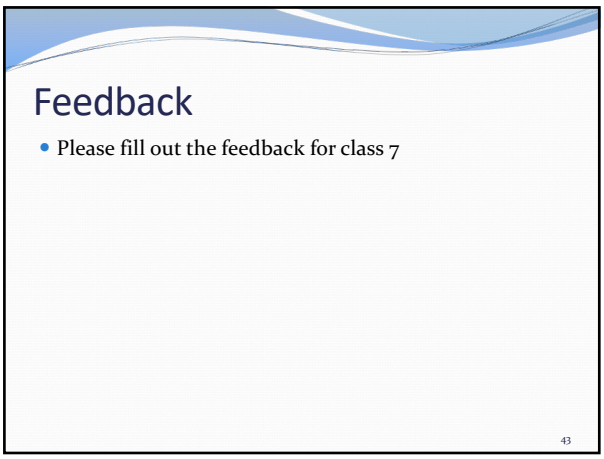

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