Documenting Sources
MCHE 201 – Spring 2019

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Everything is a remix…

- There is *very* little engineering work done that is *completely* new

- Even work representing significant advancements in the field is based on prior discoveries

- So, it is important that we document this relationship
  - To allow our reader to learn the prior discoveries
  - To ensure proper credit is given to the author/inventors/ creators of that work

Citation and Reference

- ***Citation*** acknowledges the information is from elsewhere

- ***Reference*** in the References or Bibliography section of the document tells the reader where it's from

Citations – Ways to Cite

- Directly Quote

- Paraphrase
  - Direct attribution to author and reference
  - Attribution via reference only

Direct Quote

- Use another person's words *exactly*
- Indicate the words are someone else's by using "…"
- Examples:
  - "When you use research sources, you have to do two things: 1) cite the source in the body of your report and 2) present a reference entry at the end of your report." [1]
  - "Soon after the development of the zero-derivative shapers, many other researchers sought to extend the robustness idea. The extensions can largely be categorized as: 1) Built-in robustness, or 2) Adaptive robustness." [2]

Paraphrase with Direct Attribution

- Summarize or credit the information written/ presented by another author
- Include the author(s) in the sentence directly
- Examples:
  - In a very short time, several other research groups adopted the idea and were making extensions and experimental verifications of Singer and Seering's input-shaping method [26-31].
  - For turning, the first-order Nomoto steering model is used [14].
  - Khalid, *et al* demonstrated that input shaping is compatible with human operators through a series of crane operator studies [1].

Paraphrase without Direct Author Attribution

- Paraphrase/summarize the work of other authors, but do not directly include their names in text.
- This is probably the most often used method for scientific papers
- Examples:
  - A Zero-Vibration (ZV) shaper is an input shaper that is designed to result in zero residual oscillation at the design frequency and damping ratio [2, 3].
  - An Extra-Insensitive (EI) Shaper is designed to be more robust to frequency changes than the ZV shaper [15].

Another Function of References

- References can also point the reader to additional information on the topic.
- Examples:
  - One non-feedback method used to control oscillatory systems is input shaping. Input shaping limits system vibration by intelligently shaping the reference command [2, 3]. The original, unshaped, reference command is modified by a series of impulses, called an input shaper. The resulting, shaped command moves the system with little residual oscillation. The process is shown in Fig. 2. Input shaping has been successfully implemented on many vibratory systems including bridge [4, 5], tower [6, 7], and boom [8, 9] cranes, robotic arms [3, 10], and coordinate measurement machines [11, 12, 13].
  - The mathematical model for this system was determined using the commercial dynamics package, MotionGenesis [14].

Figures Need References Too

- Figures that you did not create yourself also need to be referenced

Figure 1: Watching the Sun Set Behind Mt. Fuji [1]

Figures Need References Too

- Figures that you did not create yourself also need to be referenced

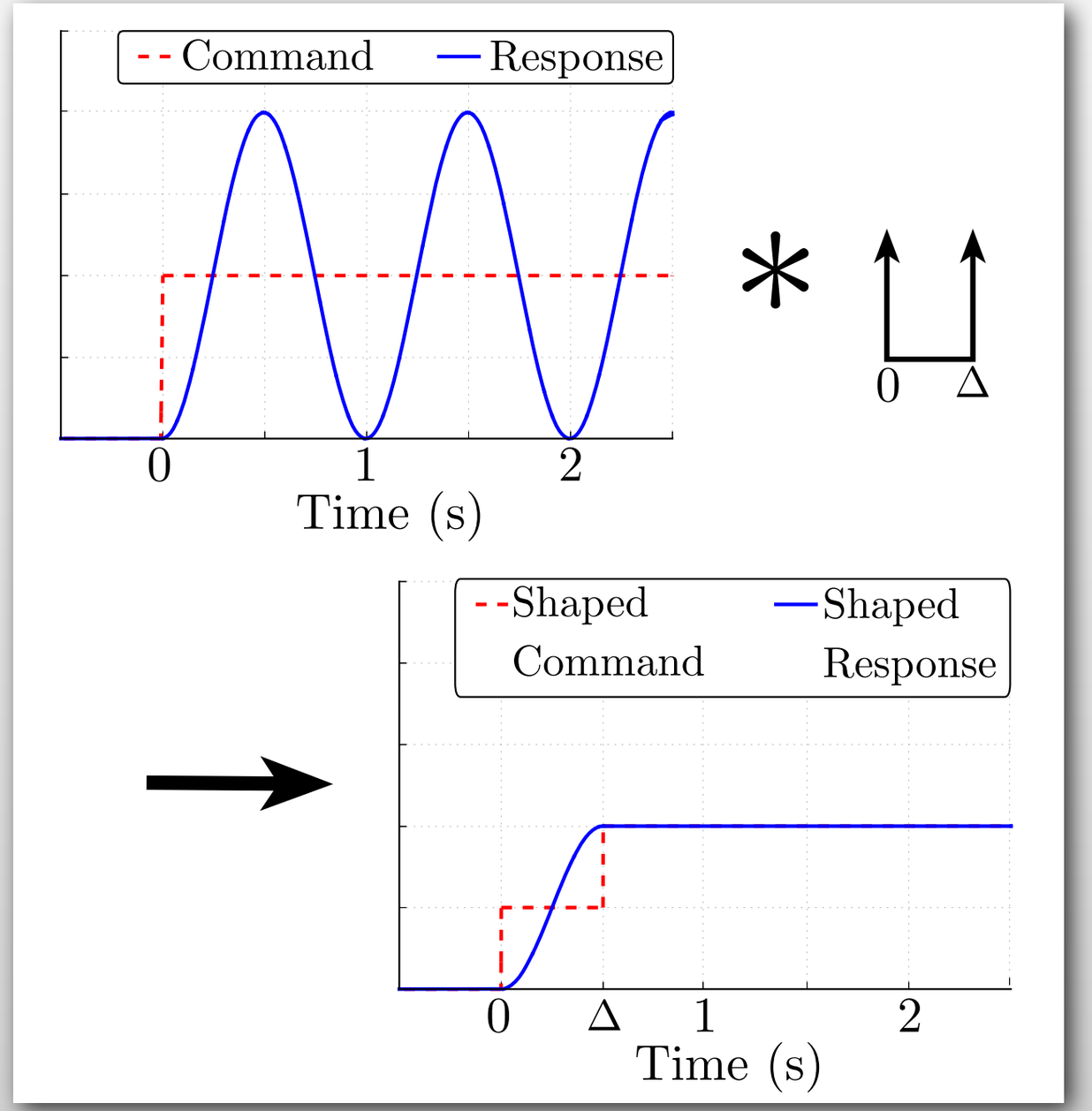

Figure 2: The Input Shaping Process [2]

Information in References

- The exact format will change based on standard's followed

- But, all will contain:
  - Author/creator names
  - Title of the paper or work
  - Year of publication or creation
  - Publisher, volume, number, and pages (if applicable)

Example References

[1] Y. Hu, B. Wu, J. Vaughan, and W. Singhose, “Oscillation suppression for an energy efficient bridge crane using input shaping,” in *2013 Asian Control Conference (ASCC)*, (Istanbul, Turkey), June 23-26 2013.

[2] J. Vaughan, “Modeling and control of rocking in cable-riding systems,” in *2013 Asian Control Conference (ASCC)*, (Istanbul, Turkey), June 23-26 2013.

[3] J. Vaughan, “Jumping commands for flexible-legged robots,” in *International Symposium on Robotics*, (Seoul, Korea), Oct. 24-26 2013.

[4] J. Yoon, S. Nation, W. Singhose, and J. Vaughan, “Control of crane payloads that bounce during hoisting,” *Control Systems Technology, IEEE Transactions on*, vol. 22, pp. 1233–1238, May 2014.

[5] A. Baheri and J. Vaughan, “Concurrent command and mechanical system design to limit transient and residual vibration,” in *International Conference on Motion and Vibration Control (MOVIC)*, (Sapporo, Hokaido, Japan), August 3-7 2014.

[6] M. S. Rahman and J. Vaughan, “Simple near-realtime crane workspace mapping using machine vision,” in *ASME 2014 Dynamic Systems and Control Conference*, vol. 3, (San Antonio, Texas), p. V003T28A005, October 22–24 2014.

[7] W. Singhose and J. Vaughan, “Methods and systems for improving positioning accuracy,” Mar. 10 2015. US Patent 8,975,853.

Plagiarism

- Plagiarism – stealing another's words ***or*** ideas
- This will ruin an academic or writing career!!!

"That was a really bad Friday for us:" WIRED warns four stories were plagiarized

with 7 comments

Last Friday, *WIRED* editor Adam Rogers got a direct message on Twitter that no journalist wants to see. Christina Larson, a freelance writer in China, told him she had seen overlap with her own work in a few *WIRED* stories, and included links to the relevant pieces.

"She was gracious, just asking for a link back in the future, said she loved *WIRED*," Rogers told Retraction Watch by phone this afternoon. It was early morning in San Francisco, so Rogers thanked her for bringing the issue to his attention, and said he'd look at it more closely when he arrived at his desk some 45 minutes later.

It was the start of an episode that would lead to the dismissal of a *WIRED* reporter, and the addition of warning notes to four of the publication's stories.

When Rogers got to the *WIRED* office, he printed out the stories, and some other material Larson had sent. Going through them with a highlighter, he saw enough of concern that he went to the magazine's research editor, Joanna Pearlstein, who also took a look.

They found a lot of problems in the four stories that Nic Cavell, a reporting fellow who had started at *WIRED* in January for a six-month stint, had published online. *WIRED* has four such fellows at a time, and the program, which pays participants, has been a big success, Rogers said.

An Example

IV. Nonlinear Control Methods

A. Sliding Mode Control

In control theory, sliding mode control, or SMC, is a nonlinear control method that alters the dynamics of a nonlinear system by applying a discontinuous control signal that forces the system to slide along a cross-section of the system's normal behavior. In other words, by using a fast switching control law, sliding mode control can stabilize

Sliding mode control

From Wikipedia, the free encyclopedia

In control system, **sliding mode control**, or **SMC**, is a nonlinear control method that alters the dynamics of a nonlinear system by application of a discontinuous control signal that forces the system to "slide" along a cross-section of the system's normal behavior. The state-feedback

An Example

This PhD student, despite working for me for 2 years, was fired. He lost his funding, 2 years of work toward his dissertation, and had to change departments. He eventually left UL Lafayette. If this had been published, he would not have had the option of moving elsewhere to start over ***AND***, as his co-author, my career would also have been effectively ruined.

In Summary…

- Give people credit for using their work, even if paraphrasing or summarizing

- Tell your reader where to look for additional information

- Be a good citizen of the scientific and engineering process

- Trust your teammates/co-workers, but verify their work