



# **Technical Communication: Figures & Tables MCHE 201 – Spring 2019**

**Dr. Joshua Vaughan**

Rougeou 225

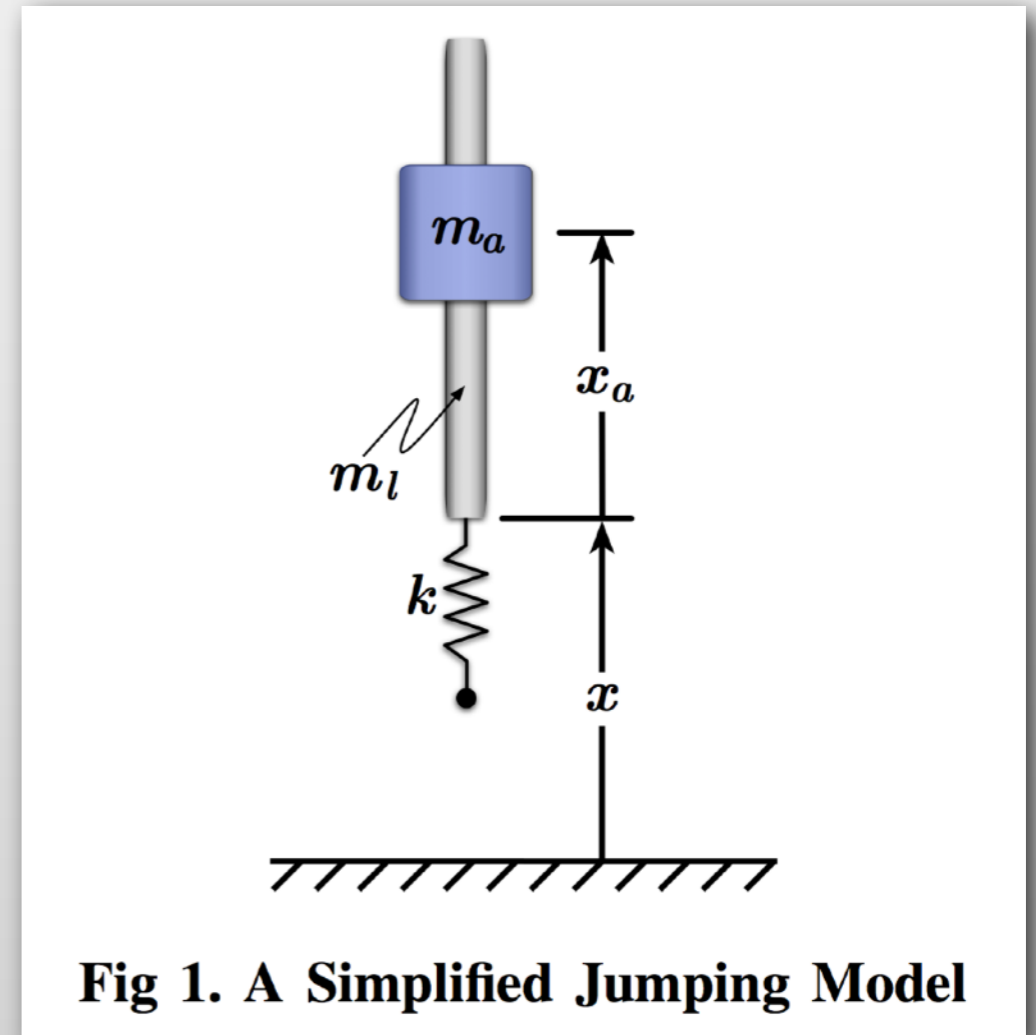
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`@Doc_Vaughan`

# Figures



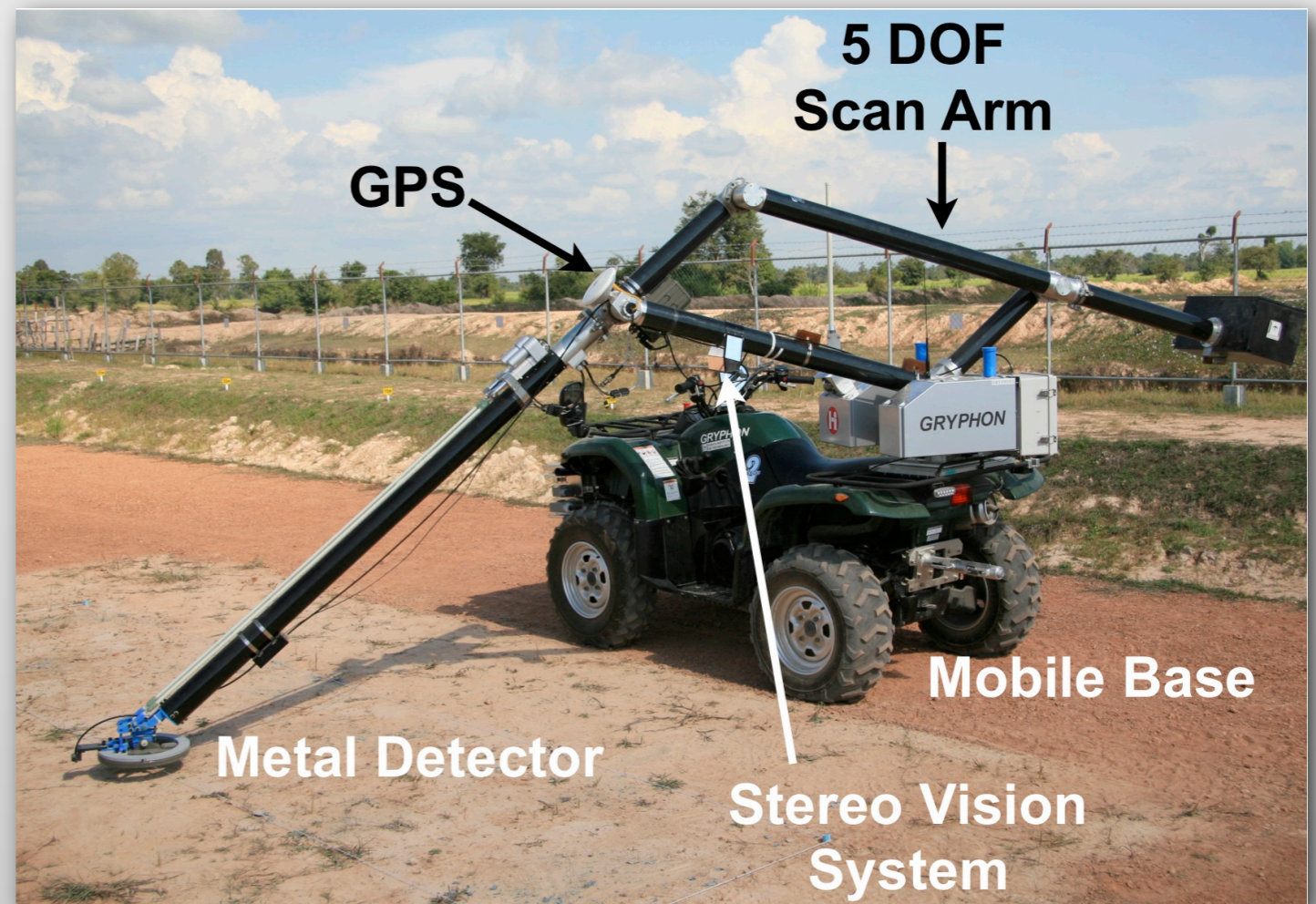
- Figure number and descriptive captions go *under* figures



# Figures



- Figure number and descriptive captions go *under* figures
- Label parts according to function



# Figures



- Figure number and descriptive captions go *under* figures
- Label parts according to function
- Provide enough dimensions to give scale
- Font size  $\geq$  body-text size
- White backgrounds are best
- Generate caption in document prep. software, not the drawing software
- *A secret (Don't tell anyone):* The better your figures are, the worse your writing can be

# Good or Bad?

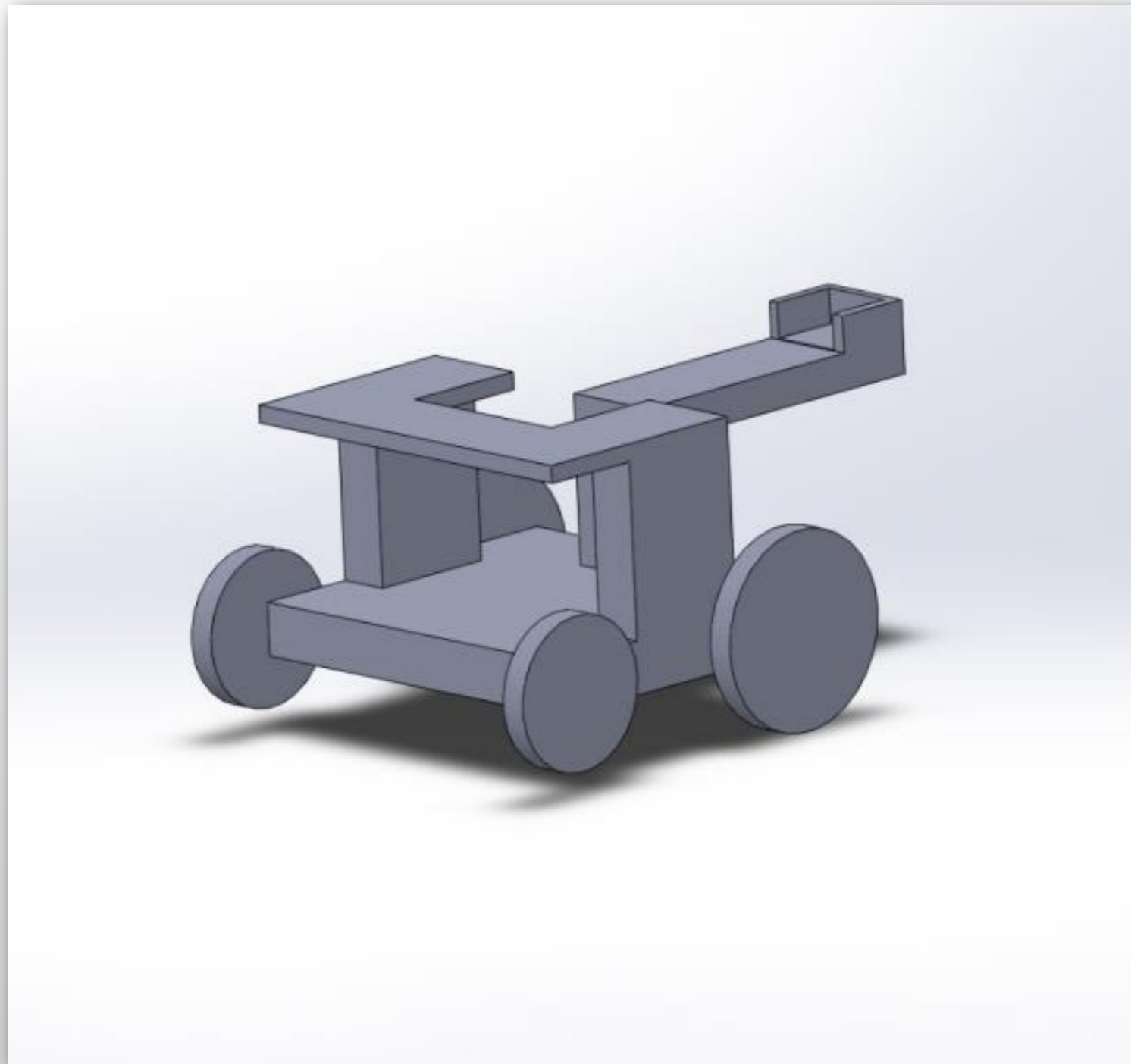


Figure 7: Alternate Design 1

# Good or Bad?



- Mostly bad
  - No labels
  - No dimensions to give scale
  - Dark background
  - Non-descriptive caption
- Good
  - Figure #: Caption below figure
  - No crazy colors in figure

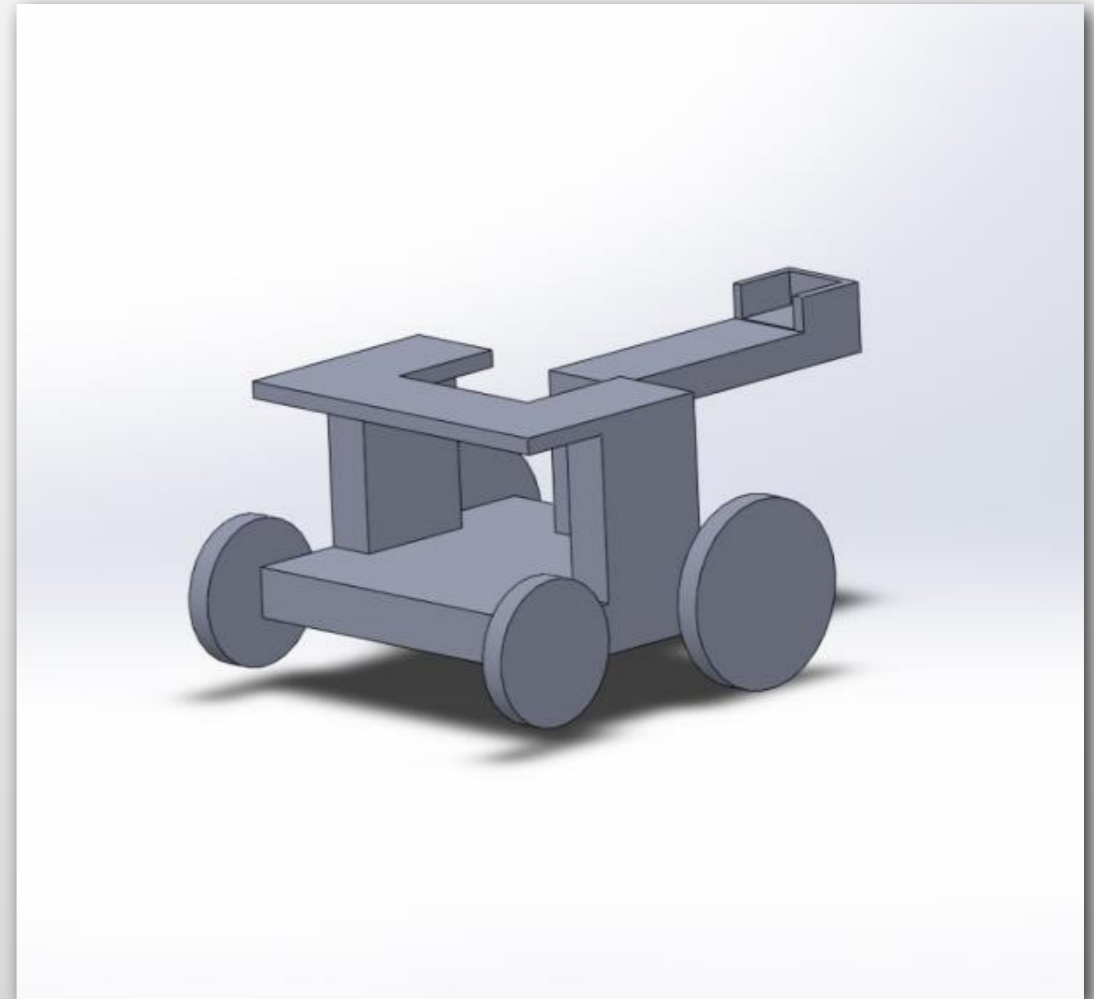


Figure 7: Alternate Design 1

# Good or Bad?

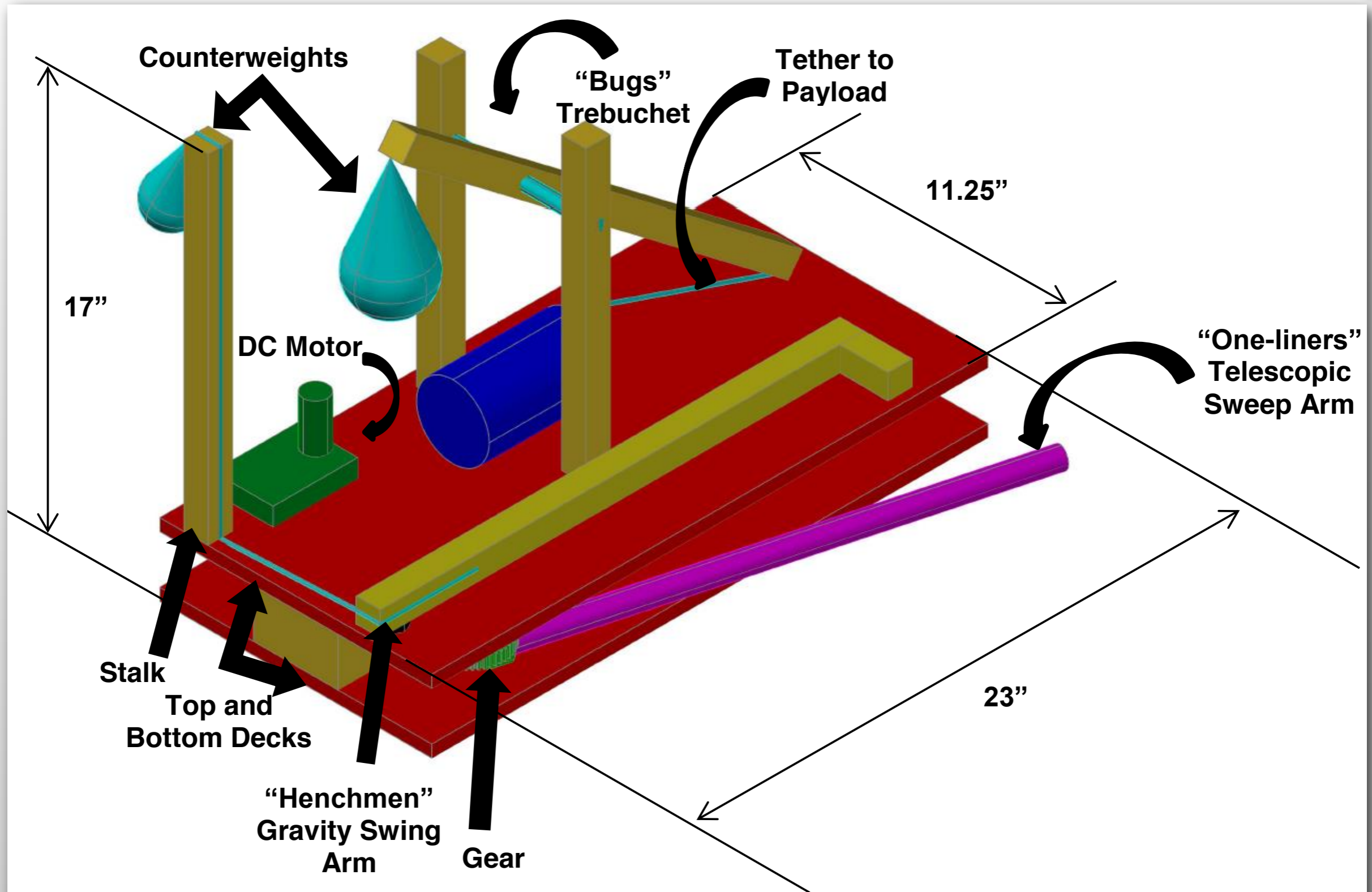
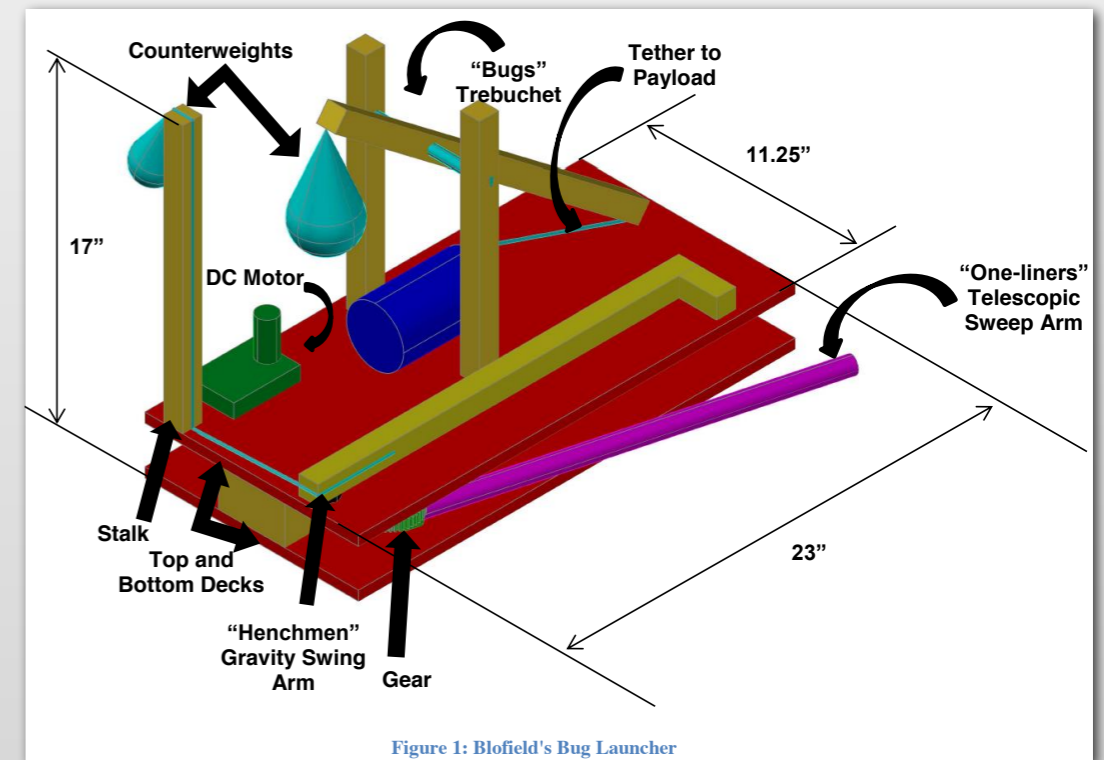


Figure 1: Blofield's Bug Launcher

# Good or Bad?



- Mostly Good
  - Most parts labeled according to their function
  - Enough dimensions given to provide scale
  - Light background
  - Descriptive caption
- Bad
  - Crazy colors
  - Some part labels too generic





# Good or Bad?

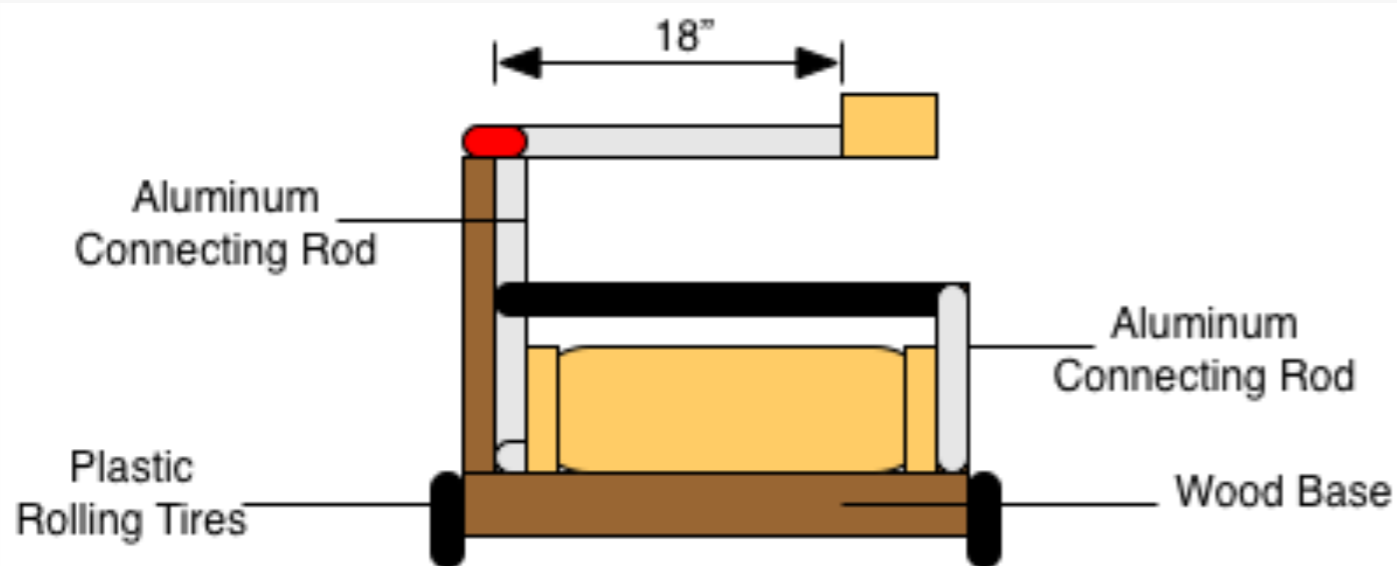


Figure 1: *Pac-man Front View*

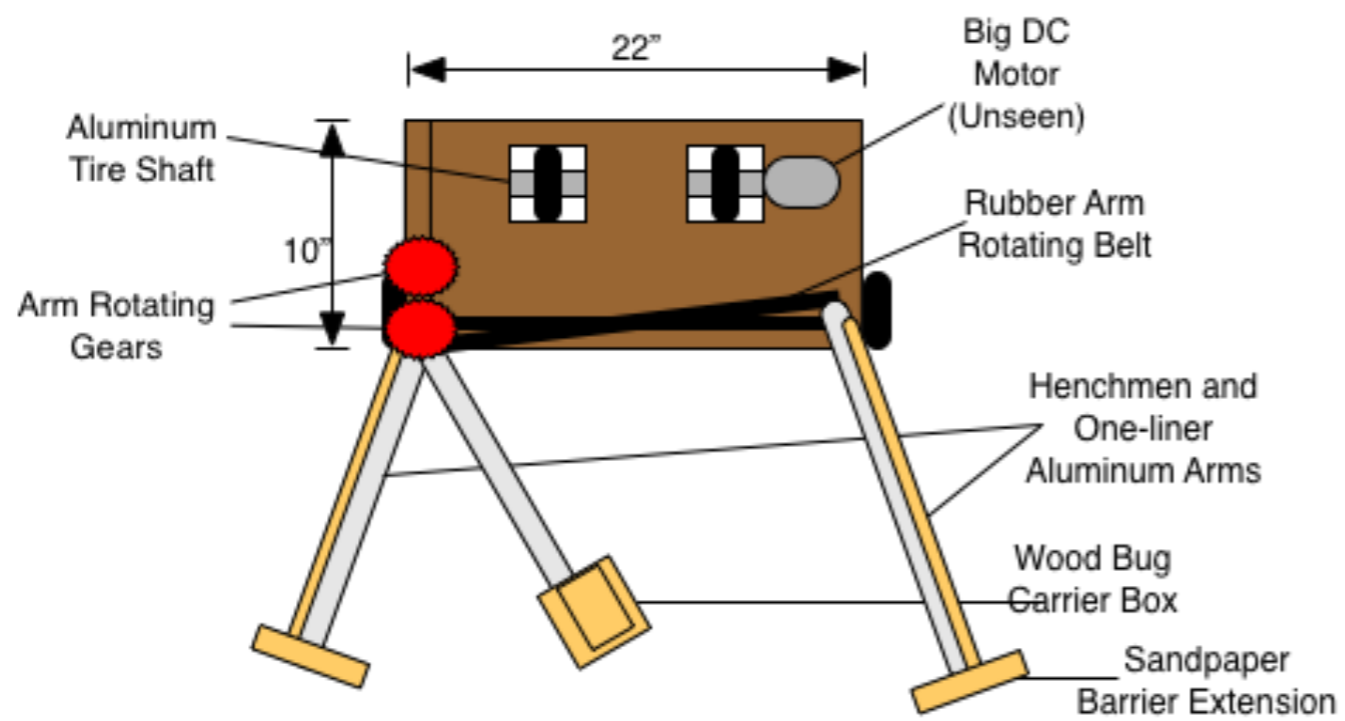


Figure 2: *Pac-man Top View*

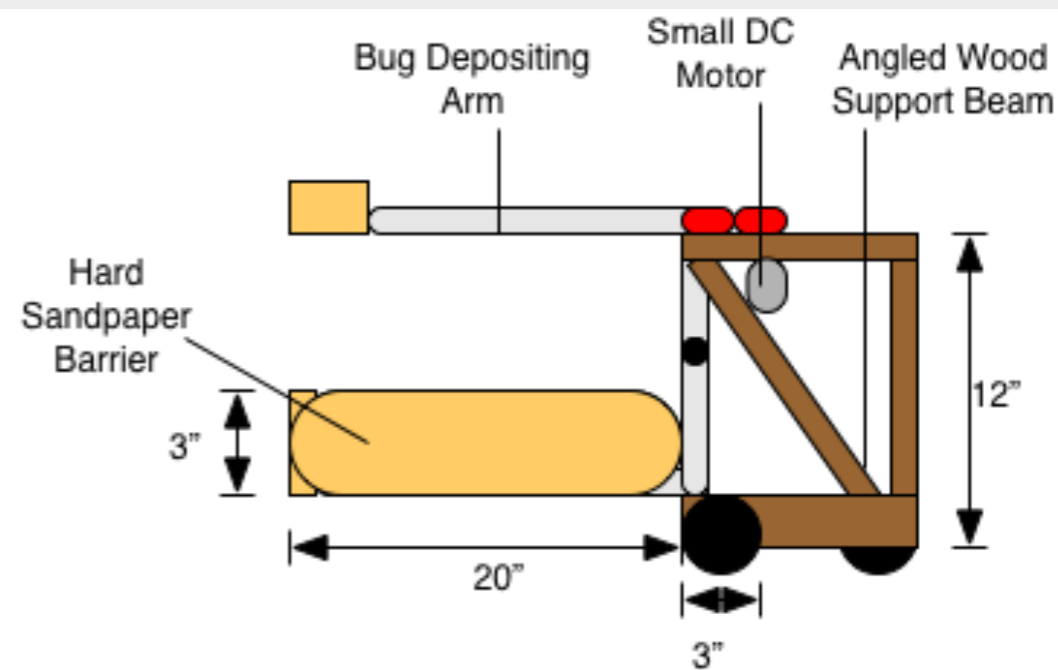


Figure 3: *Pac-man Side View*

# Generating Figures



- Use a ***vector graphics*** format, will scale up/down without degrading quality
- Avoid using screenshots, use a proper export (to a vector graphics format) from the graphics program
- Check quality once they are inserted into your document/presentation
  - Is the text at least as large as the document body text?
  - Is the figure/plot clear, without any compression artifacts?

# Figure Generation Software



- Inkscape – <https://inkscape.org/>
  - open-source and free
  - available on macOS, Windows, and Linux
- Commercial Options
  - Adobe Illustrator (macOS and Windows)
  - Sketch (macOS)
  - Autodesk Graphic (macOS and iOS)

# Plots



- Figure number and descriptive captions go *under* figures
- Include units
- Differentiate between lines (also clear in B/W) and provide a legend
- Don't cover data with the legend
- Font size  $\geq$  body-text size
- White backgrounds are best

# Good or Bad?

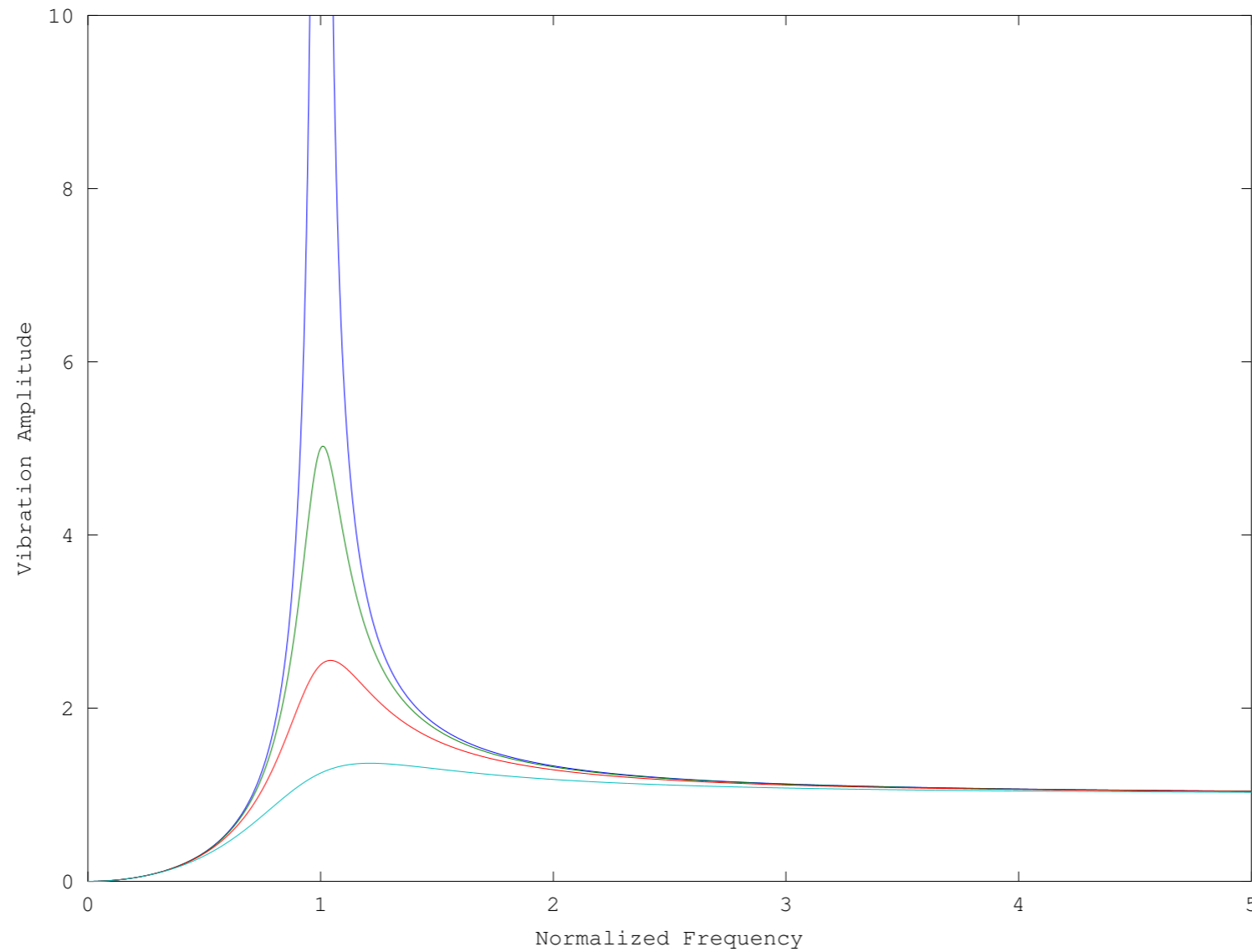
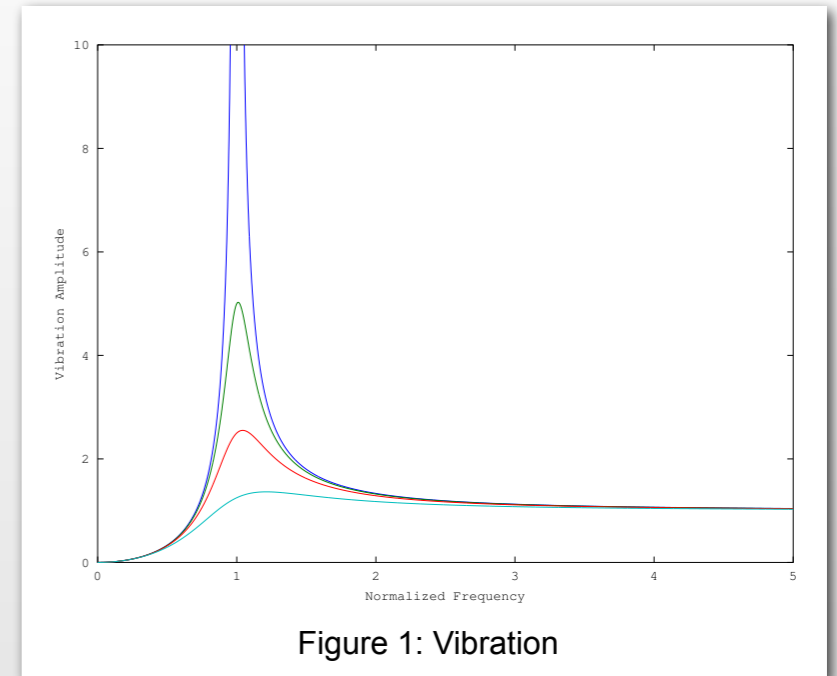


Figure 1: Vibration

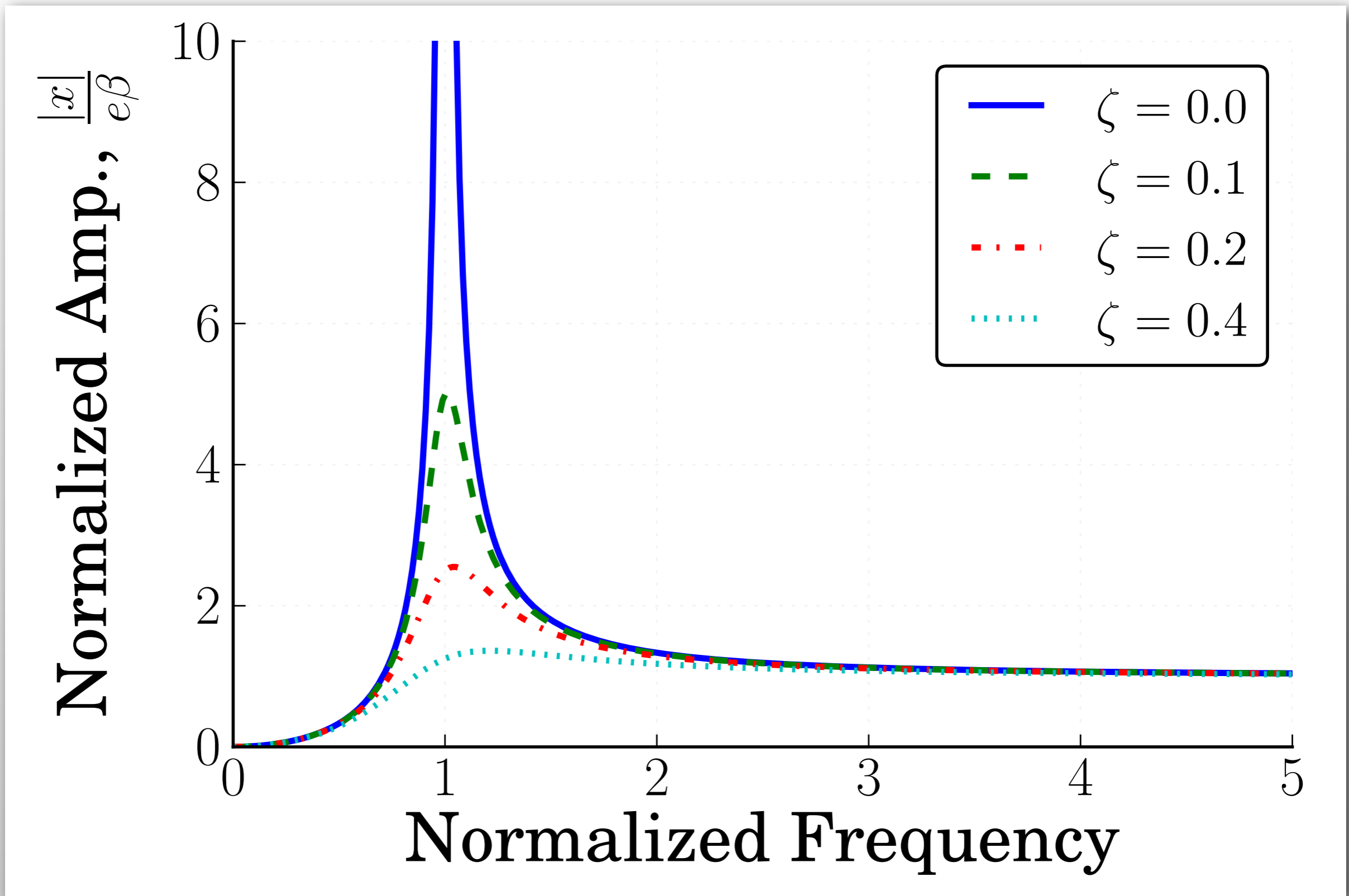
# Good or Bad?



- Text is too small
- Lines are too thin
- Unable to distinguish lines in B/W
- No legend
- No units
- Figure caption not descriptive enough



# Better?



# Writing about Figures/plots



- Include and number figures in order of reference in the text
- Don't include figures you don't reference in the text
- Exactly match terms from figure in text
- Referencing in text:
  - “Figure X shows...”
  - “..., as shown in Figure X.”
  - “Figure X is ...”
  - Do *not* use parenthetical citation, “blah blah (Figure X).”



# Example

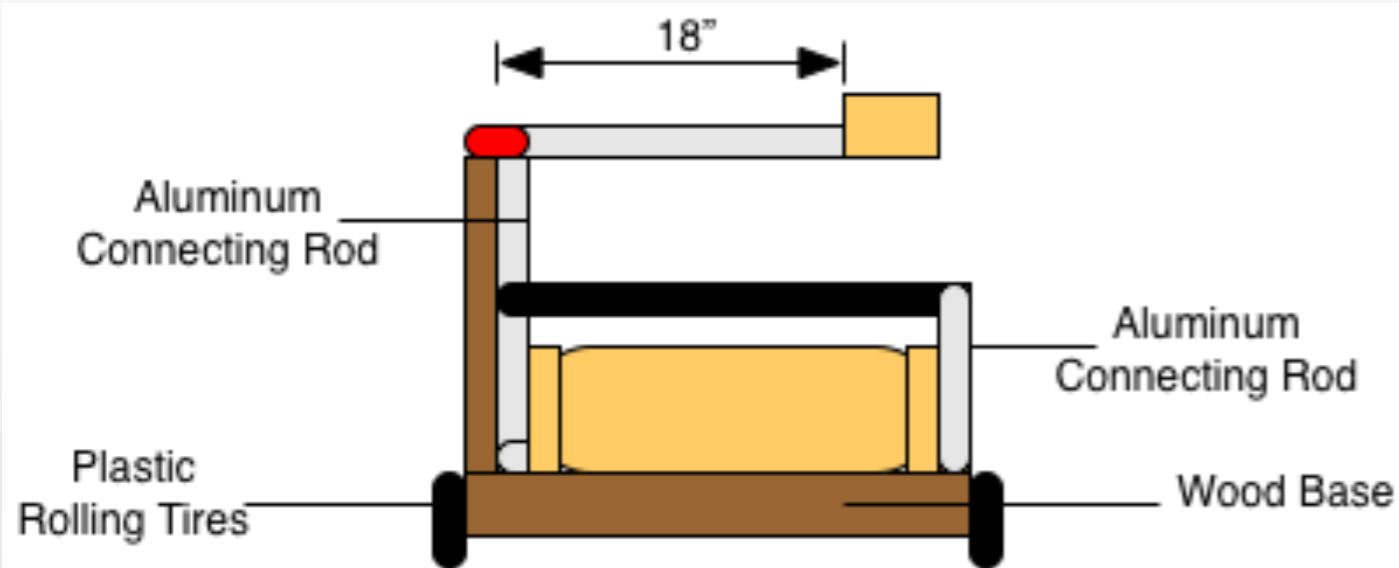


Figure 1: *Pac-man Front View*

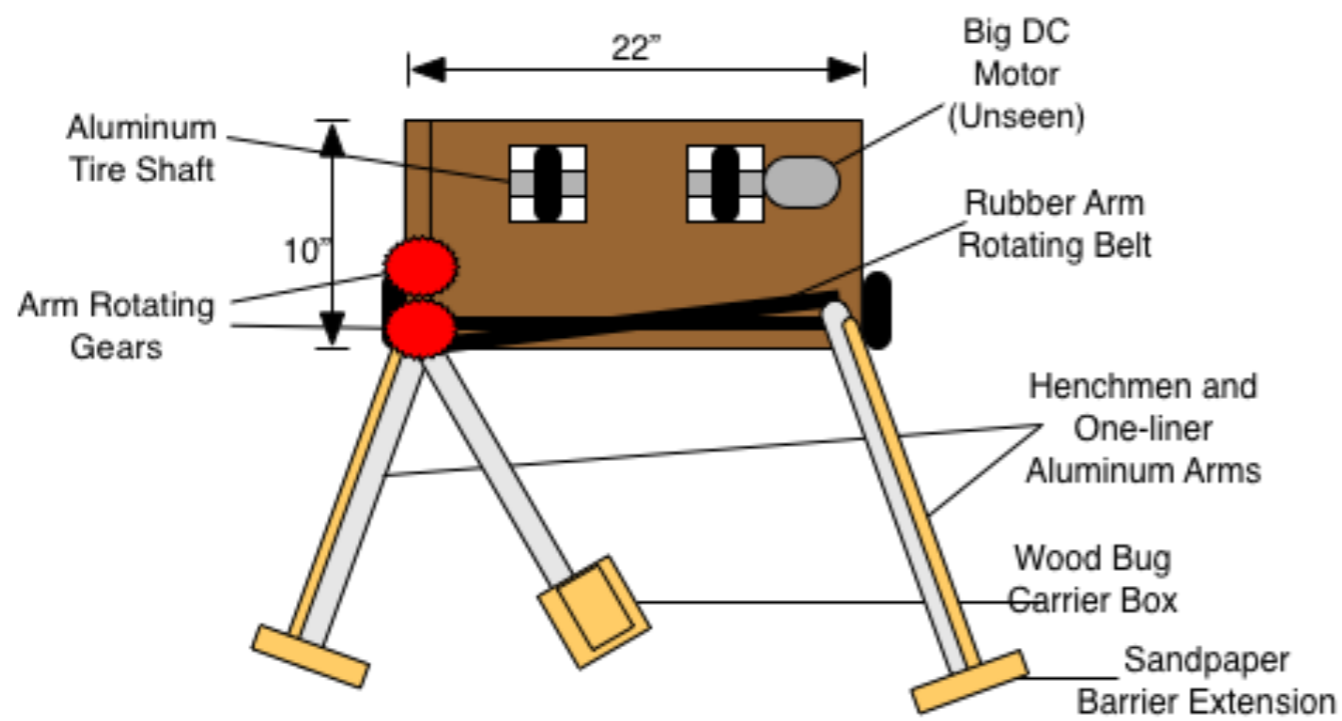


Figure 2: *Pac-man Top View*

- “Figure 1 shows a front view of the Pac-man device. It is built atop a wood base and uses two plastic rolling tires...”
- “A top view of the Pac-man device is shown in Figure 2. The two Henchmen and One-liner aluminum arms are shown expanded in this view...”

# Tables



- Font size  $\geq$  body-text size
- Table number and caption go *above* the table
- Number and include in order of reference in text
- Reference similar to figures – “The command and control methods to be explored are shown in Table 1...”
- Do ***not*** use a screenshot of an Excel worksheet

Table 1: Command and Control Methods to Be Explored

Command Generation Method	Control Method
Positive Input Shaping	PID
Unity Magnitude (UM) Shaping	$H_\infty$
Specified Negative Amplitude (SNA) Shaping	Sliding Mode
Deflection-Limited Input Shaping	Model Reference

# Proper Citation



- If you did not generate a figure or plot yourself, you *must* cite its source.



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

# Where to Include the Figures/Tables?



- Inline with text
  - At top or bottom of the column in which they appear
  - As close to reference in text as possible
- All at the end of the report
  - Attached and numbered in order of reference in the text
  - No need for a section title
- Do ***not*** mix the two styles



**Thank you.**