[Morse code beeps]
[Whoosh]
[Helicopter rotor]
Hi. My name is Annika Thomas, and I'm a fellow
with the AeroAstro Communication
Lab at MIT, and today we're going to be
talking about figure design.
By the end of our lesson,
you should be able to understand
the purpose of figures
in technical communication.
You will learn criteria for designing
clear and effective figures,
and you should be able
to apply best practices to evaluate
and improve a figure.
Some criteria
for success for your figures is
they should communicate a clear,
one sentence, main message.
They provide evidence
that directly supports that message.
They minimize visual noise
that can distract from that message.
They should be easy to interpret
without having additional explanation
needed.
So what is the purpose of a figure?
Figures communicate a takeaway message.
The evidence that supports that message
and the figures
job is not just to show data,
but also to show what you learned from it.
We're not just showing
that quantitative data that you collected,
we're also really encapsulating whatever
that takeaway message is from the figure.
The first thing you should do
is analyze the context of your figure.
This includes why does our figure exist?
What's the purpose of it?
Who is our intended
audience for the figure?
Is it a more technical audience
in a scientific paper,
or maybe a more general audience
in a presentation?
And where will that figure appear?
In what setting?
So figures

look different in different settings.
Like I mentioned, in papers,
we have self-contained figures
and informative captions.
Posters have large readable figures
that should be visible
and interpretable from a distance,
and slides
in presentations have simplified figures
that should be optimized
for quick comprehension.
So you're going to want to decide
what the correct figure type is for you,
based on the circumstance
in which you're sharing that information.
Text, tables, and figures
all communicate information differently.
Figures can serve different purposes.
Photos give us realism and scale,
understanding of experimental setups,
and things that we can actually physically
see and interpret.
Illustrations
give us structure and function,
and graphs provide us with
trends, comparisons, and processes.
And on this slide,
you'll see three different ways in which
we can communicate the same information
using different figure types
including a table, text,
and an actual figure on an X-Y chart.
So depending on the circumstance,
we might choose
one of these different figure types
to communicate this information.
So a certain type of
figure that we might be
including is a plot.
And you want to choose the correct plot
design as well.
So the plot type should match
what you want to show with that figure.
Distributions are well shown by histograms
and box plots.
Trends over time are most commonly shown
using line plots.
Correlations can be shown
using scatter plots,
And you always want to plot your data

before summarizing it.
An important concept in figure
design is signal versus noise.
Signal is the message
that you want the audience to see,
while noise is anything that distracts
from that message.
Some common sources of noise in figures
include too much data in your figure,
using poor plot choices,
so selecting the wrong type of plot
based on the the message that you want
to communicate with your audience,
and sometimes including excessive visual
elements can distract
from that main message.
And on this slide we have a good example
of signal versus noise in a pie chart.
On the left side we have pretty small text
a bunch of labels
and kind of a wordy caption.
versus on the right side,
we really streamline this pie
chart into a key takeaway message.
Another important thing
to think about while designing
your figures is accessibility
in figure design.
Your figures should be understandable
to you all audience members.
Some best practices for this include
don't rely on color alone in order
to communicate a message,
you should use high contrast
and readable fonts.
And in addition to your figure caption,
you should also include
alt text to describe the figures.
Now we're going to go
ahead and take these concepts
into an actual figure
that you're working on with an activity
where you evaluate and revise a figure.
So go ahead and choose
a figure that you are currently using
or plan to use for a paper, poster,
presentation, etc.
and answer the questions
detailed in the activity.
[Alien spaceship beeps]

Now by the end of this lesson,
you should be able to articulate
the main message of a figure.
You should be able to evaluate a figures
context,
audience, and signal to noise ratio.
And you should be able to identify
concrete changes
that would improve clarity, accessibility,
and interpretability of your figures.
Thanks for watching.
[Alien spaceship beeps]