CS181DT Class 15: Arguing your project

"motivation" on unsplash (used ironically)

Motivating research projects

How can we justify what we build?

- Your tool is not a research project, but we can learn from methods in HCI research on how to construct an argument for *why* we should build an interactive system
- Every step of the design process helps justify our *design decisions*
- We can learn from written academic papers how to *rhetorically* justify our tool

General HCI systems academic paper structure

- Abstract
- Introduction
- Related work
- Method/System description
- Evaluation
- Future work
- Conclusion

- A 250 word summary of the paper
- Why is your problem and solution important?
- What have other people done in this space?
- How does your tool work? How did you build it?
- How do you prove your tool is good?
- What are limitations? What would you do next?
- An abstract but reversed

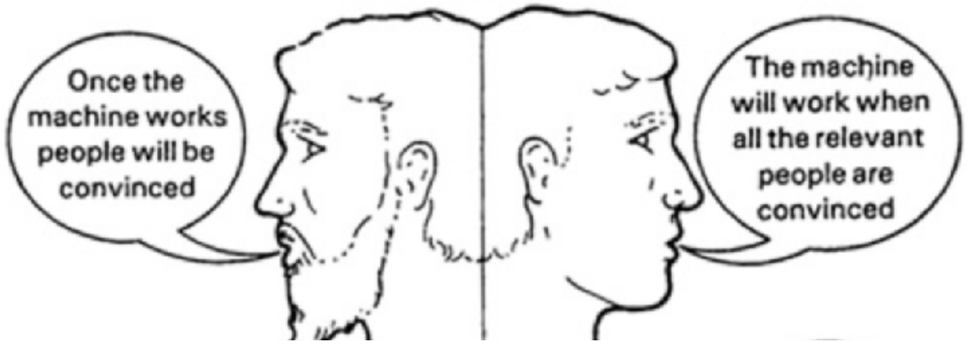
For your 4 page paper…

- Abstract — By the due date
- **Introduction** (today)
- Related work (extra credit)
- Method/System description — After you've built the system
- Evaluation — After our in class final evaluation
- Future work
- Conclusion

What is the point of publishing?

- Disperse new knowledge that you created
- Describe how to reproduce results for other academics
- Framing: a paper is an argument more so than a report
  - A good introduction increases perceived legitimacy in the peer review process so your paper is more likely to get published
  - Your related work is less a laundry list of existing literature and more a chance to frame your work to (1) get authorial allies and (2) distinguish yourself from the pack

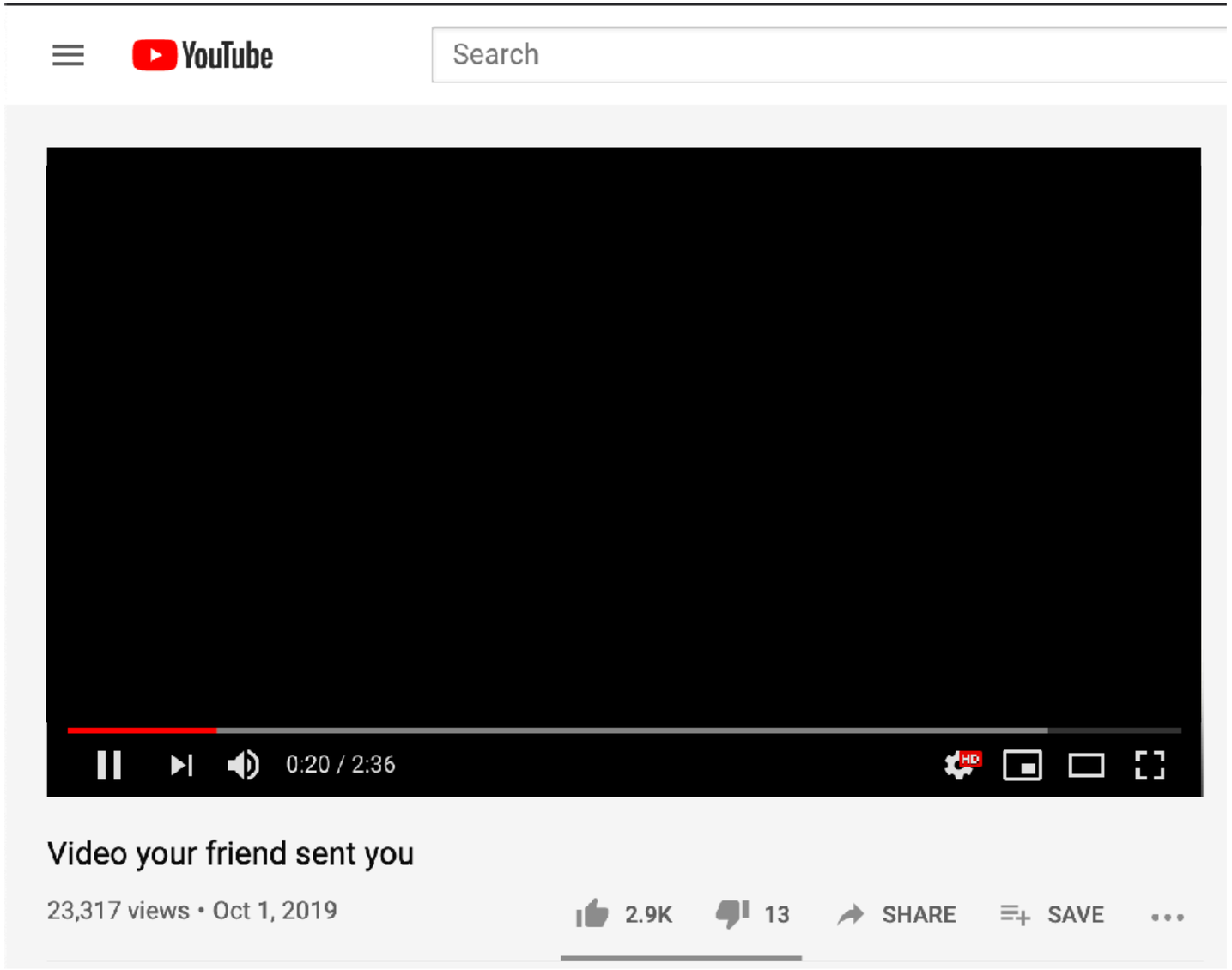
All research knowledge is social



- To get a published paper (e.g., to “create knowledge”), you only need to convince a small set of people (~5) in the community who peer review your paper
- In *Science in Action (1987),* Bruno Latour argues it isn’t what you put on your paper that’s important, but *how it’s interpreted and cited in the community.* Papers are black boxes and we should also look into the social relationships that shape scientific knowledge (your design documentation!)
- Doing research is a *conversation* with other researchers. By putting your work out there, you are signaling that it’s important, and other people should care about it.
- That’s the *introduction* of your paper: you’re making an argument on why they should care.

How to write an introduction

Why write an introduction?



By this point, the video has hopefully made clear to you what it’s about, and you’ve made a decision about whether to watch the rest of it.

Each introduction makes the case for two things:

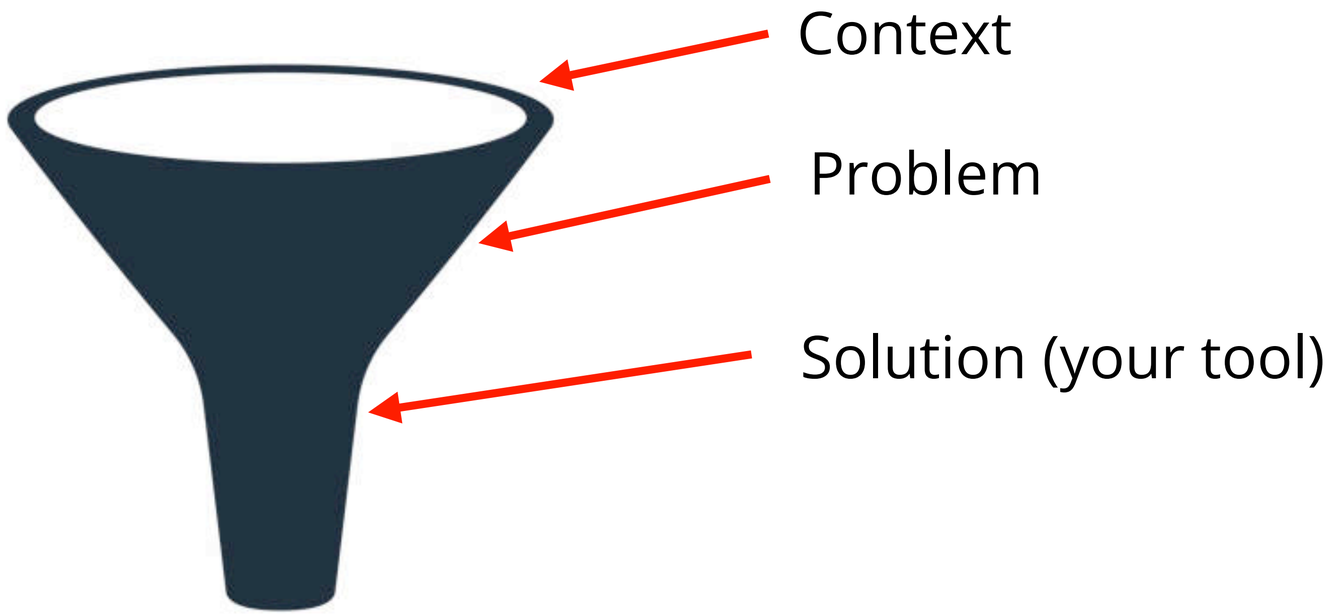
- 1) The **problem**: why do we care about the problem you're solving?
- 2) The **solution**: why is your approach creative and correct?

One way to make this case is through a 6 point outline

- 1) Context: what is the domain you're working in?
- 2) The **problem**: why do we care about the problem you're solving?
- 3) Setting up "the bit": why is the problem hard? What are assumptions in the current space that are often left unarticulated? (*Needfinding helps here!)*
- 4) The "bit flip": What's your insight? How do you invert the assumption, saying, "no, it should be this way instead?"
- 5) The **solution** that instantiates the bit flip: why is your approach creative and correct?
- 6) Evaluating the solution: How can you prove flipping the bit had the effects you intended?

Funnel

- A good introduction is like a funnel. Your first sentence should be very broad to introduce the domain of your project, and each sentence narrows it down to introducing your tool.

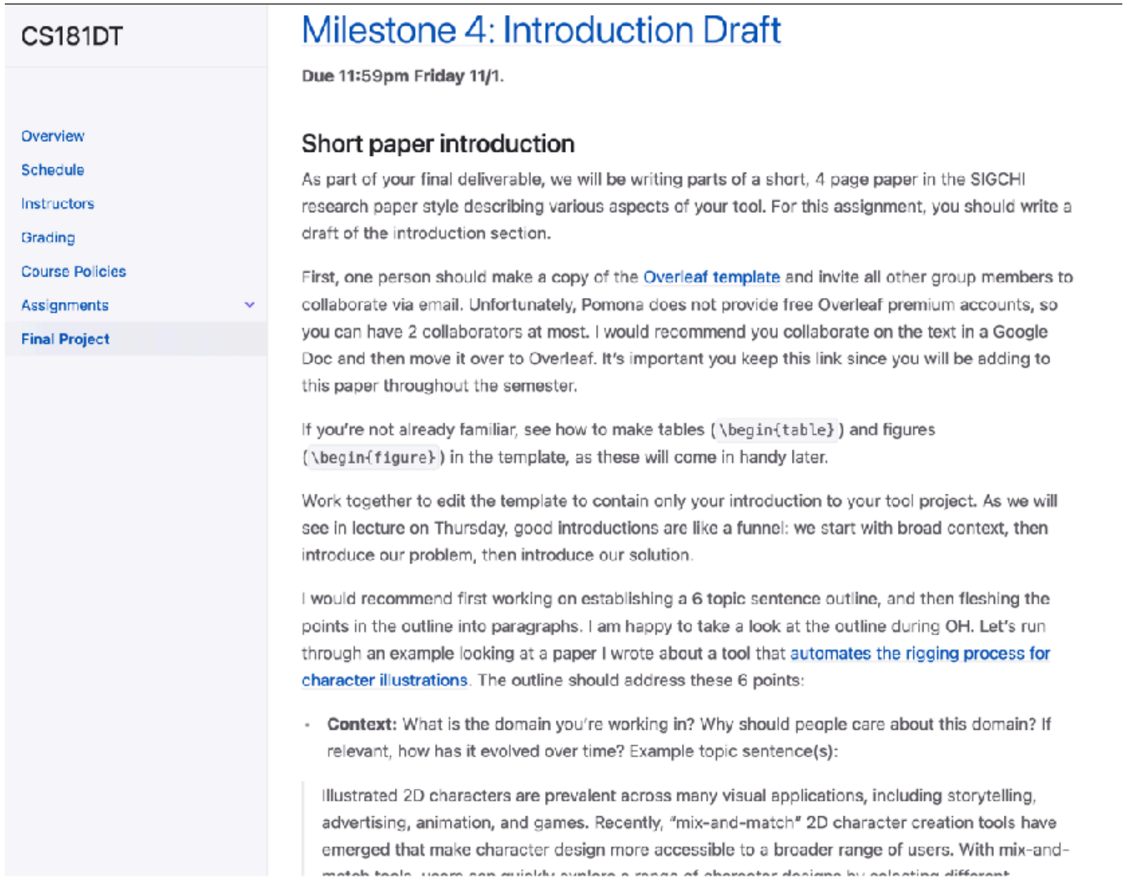


Example bit flips

Bit	Flip	Project
Sketching can control motion easier than rigs, parameter sliders, or scripting, but it only works for single objects.	**create new data structures** “Kinetic textures” allow for motion control of *collections* of objects by applying physical simulation to groups while maintaining a sketch interaction.	Draco
3D printing creates external cases and we assemble electronics in the case for an interactive device.	**use new materials (light)** Interactive devices can be 100% printed without assembly through the use of optics	Printed optics
The geometry of 3D models isn’t available to people with blindness or visual impairments unless they 3D print each iteration, which is very slow.	**develop new workflows** Provide tangible feedback to render intermediate stages of 3D modeling on a shape display	shapeCAD

Milestone 4: Introductions

- Use Overleaf template
- Write a 6 point outline first
- May I suggest writing the outline as a group and then assigning individuals to turn each bullet point into a paragraph :)
- Just a draft! I'll give you feedback to iterate for your final paper



CS181DT

Overview
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Instructors
Grading
Course Policies
Assignments
Final Project

Milestone 4: Introduction Draft

Due 11:59pm Friday 11/1.

Short paper introduction

As part of your final deliverable, we will be writing parts of a short, 4 page paper in the SIGCHI research paper style describing various aspects of your tool. For this assignment, you should write a draft of the introduction section.

First, one person should make a copy of the Overleaf template and invite all other group members to collaborate via email. Unfortunately, Pomona does not provide free Overleaf premium accounts, so you can have 2 collaborators at most. I would recommend you collaborate on the text in a Google Doc and then move it over to Overleaf. It's important you keep this link since you will be adding to this paper throughout the semester.

If you're not already familiar, see how to make tables (`\begin{table}`) and figures (`\begin{figure}`) in the template, as these will come in handy later.

Work together to edit the template to contain only your introduction to your tool project. As we will see in lecture on Thursday, good introductions are like a funnel: we start with broad context, then introduce our problem, then introduce our solution.

I would recommend first working on establishing a 6 topic sentence outline, and then fleshing the points in the outline into paragraphs. I am happy to take a look at the outline during OH. Let's run through an example looking at a paper I wrote about a tool that automates the rigging process for character illustrations. The outline should address these 6 points:

- **Context:** What is the domain you're working in? Why should people care about this domain? If relevant, how has it evolved over time? Example topic sentence(s):

> Illustrated 2D characters are prevalent across many visual applications, including storytelling, advertising, animation, and games. Recently, "mix-and-match" 2D character creation tools have emerged that make character design more accessible to a broader range of users. With mix-and-

https://cs.pomona.edu/classes/cs181dt/project/#milestone-4-introduction-draft