CS 309: Autonomous Robots
FRI I

Final Project Proposals

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How to do a Scientific Presentation

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Final Project Proposals – Google Drive

- Introduce the problem

- Give background if necessary

- Describe your approach to solving the problem

- Tell us how you evaluate your solution

- Describe your results

- Conclude

- Outlines are generally only for longer talks, so you should not use one for your final presentation.

Blech

- Full-screen images work for keynotes and TED talks
  - For a keynote, people already know what the speaker is talking about
  - For a TED talk, the audience do not know enough about the subject area to be spoken to on a technical level
- If you use a full-screen image, it needs to add something important to your talk.
  - This is just a picture of a puppy.

Introduction

- The problem is that with no training, my class is likely to give terrible talks!

- Causes
  - Nobody has asked them to give a talk before
  - They did a couple of talks in high school classes, but the teacher did not really discuss what a talk looks like
  - They have seen TED talks and kickstarter pitches, but no real scientific talks
  - Thankfully, culture is moving on from this, but an emphasis on quirkiness over quality or utility also leads to terrible presentation styles.

The Problem

- Watching bad talks is unenjoyable and gives me a headache

- Additionally, it fuels nightmares about my students going on to give future bad talks

Background

- Other professors have taken these approaches

    - Ignore the problem. It is your students' problem, not yours. You only need to devote 2 hours a semester to watching these talks.

    - Blame other instructors. They are the ones who left your students unprepared.

Background

- Other advice

  - Link a YouTube video
    - This approach fails for many reasons.
      - Often the presenters are not scientists, or are not addressing a scientific audience
      - Captain Disillusion wears Halloween makeup
      - Most YouTube science videos are just about Mentos and Coke or Elephant Toothpaste

  - Direct students to a talk that you really like.
    - That talk was given by a senior scientist who breaks all of the rules of giving a talk.

Background

- Previous good approaches
  - Demonstrate what a good presentation looks like to your students

Approach

- I like to outline white slides with bullets and just the bare minimum graphics to make my point
  - This places the emphasis on my message rather than flashy presentation.
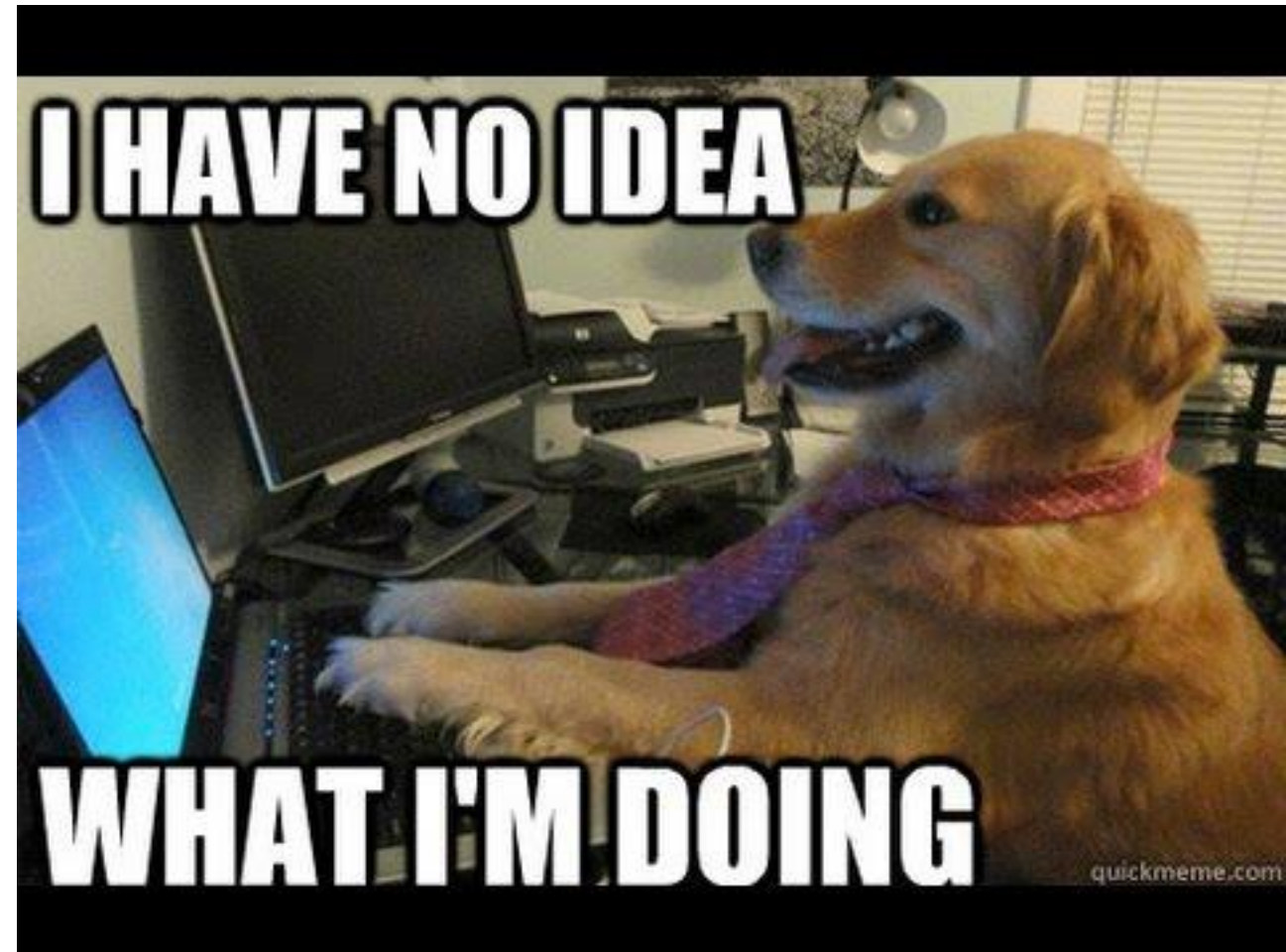
Approach

- Many people hate this and insist on using images

- If you include an image, make sure that it is relevant to what you are talking about
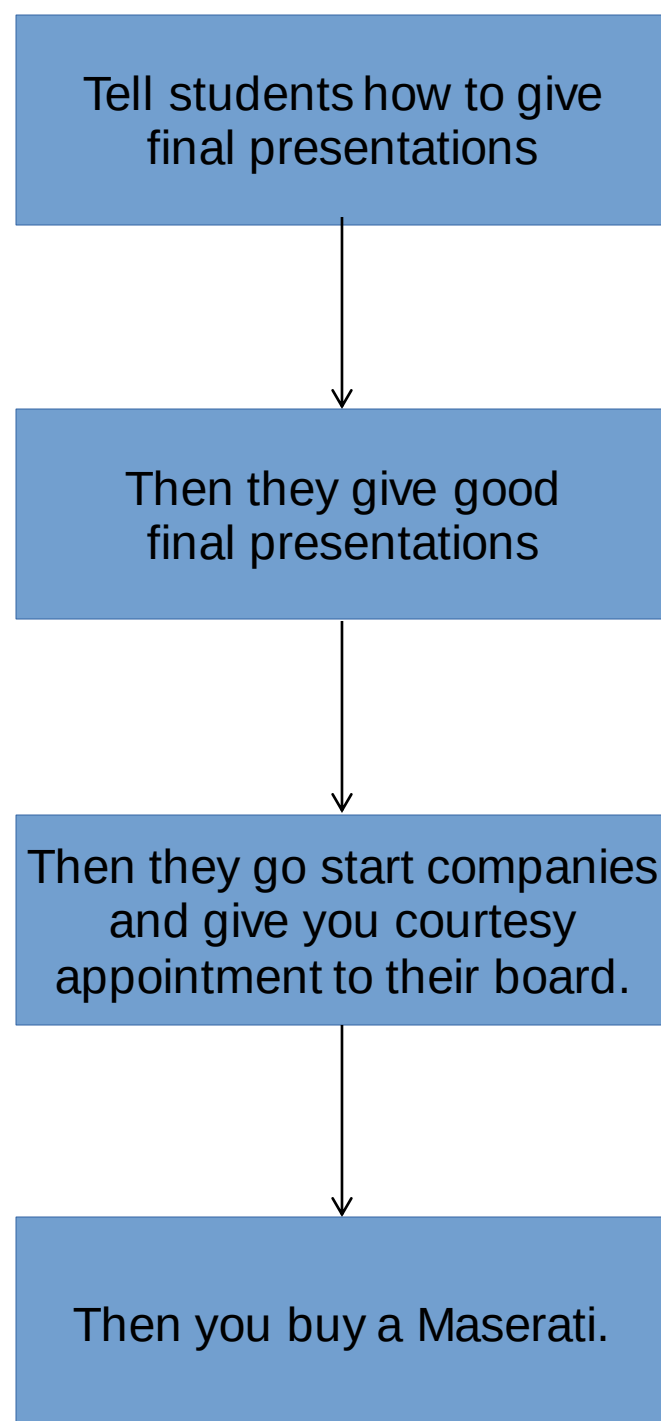 - You probably should include images

Approach

- Regardless, the point of this section is that you give a detailed description of how you are solving your problem.

Approach

- This is where you put formulas, descriptions of algorithms, and designs.
- Your tests go in the NEXT section. Not this one.

Tell students how to give final presentations

↓

Then they give good final presentations

↓

Then they go start companies and give you courtesy appointment to their board.

↓

Then you buy a Maserati.

Evaluation / Experimental Setup

- We recruited 40 participants from the UT population

- 20 male/20 female

- We obtained informed consent

- Participants were asked to interact with our robot teaching it to dance for 15 minutes

- Afterwards they responded to a brief post-interaction survey.

Evaluation / Experimental Setup

- Generally you show an image of your interaction and evaluation here.

- You also describe what they're doing on this slide.

Results
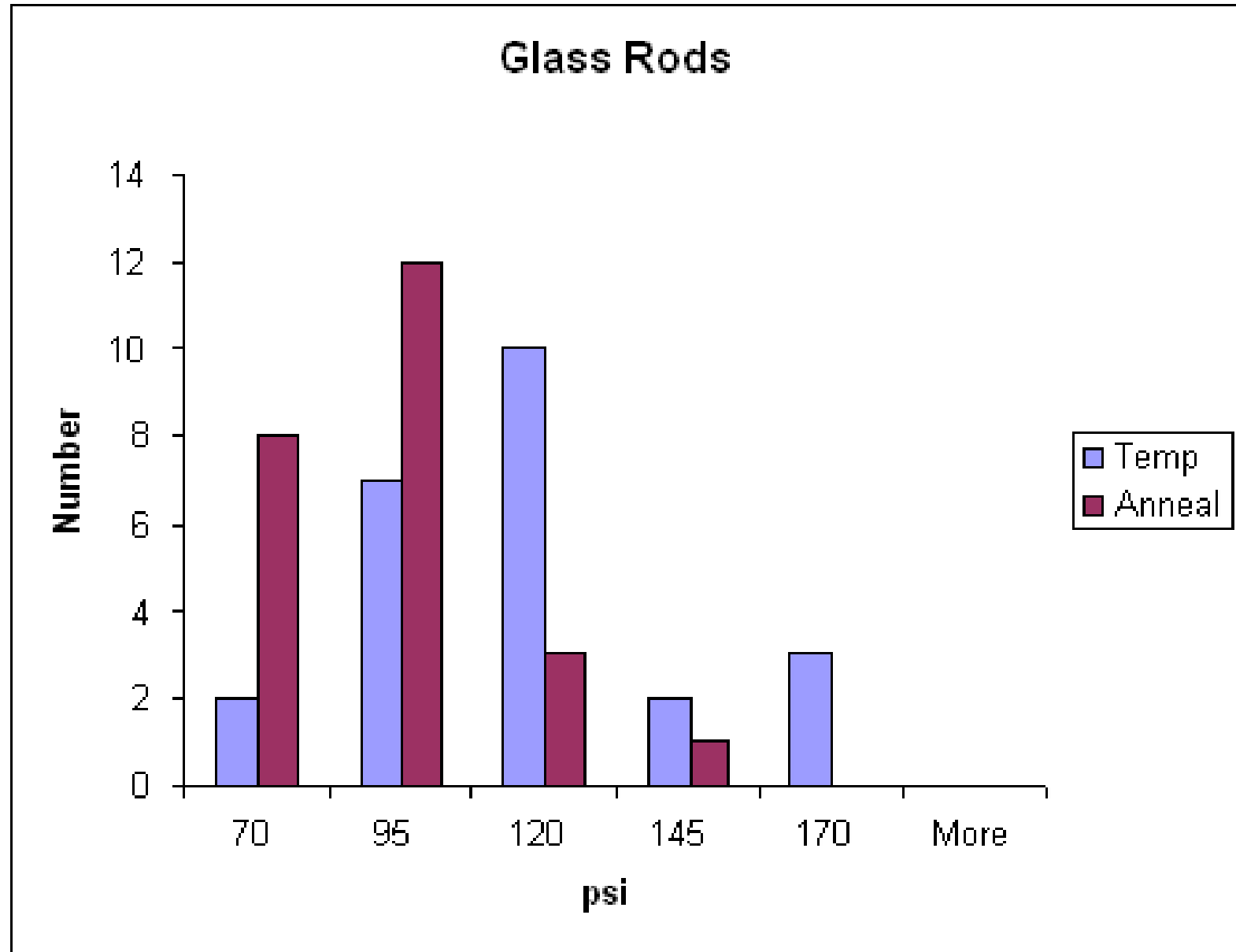
Results

- "Results" is a lousy name for a slide with a chart on it.
  - Either just make the entire slide the chart
  - Or give the title of what the chart is about.
  - The entire slide being the chart works better.

- Always label your axes.

- Always include a legend.

- Always include error bars if you can compute them.
  - ..meaningfully.
  - If your error bars are so wide as to be meaningless, exclude them.

Results

- You also *interpret* your results.

- It is YOUR job to tell the audience what your results mean.
  - **BUT THEY WILL EVALUATE WHETHER WHAT YOU ARE SAYING IS VALID.**

  - So, you present **and** interpret the data.

    - But they will critique it.

Conclusion

Recap your
- Problem
- Approach
- Experiment
- Results

Do it briefly, 1-2 slides

Conclusion

- Your whole talk should take 15 minutes

- With an additional 5 minutes for questions

- That's 2 minutes per sub-section. You can give us that much.

- Rehearse your talk 3x before giving it, exactly as you give it.

- Otherwise, you will sound bad.

- I rehearse my talks far more than this if they are for a big audience.

Conclusion

- This is a life skill
  - A good job could land you a job, or introduce you to your hero.

  - A bad talk will be forgotten.

    - If you've sunk 7 years into a dissertation, you'd rather people remember the disaster of your defense than forget it entirely.

Conclusion

- My **best** talk got me
  - My job here

  - Introductions to several AAAI presidents.

  - Featured in so many documentaries and newspaper articles that I stopped counting

  - Featured on the front page of my grad school's website

- A very quick Google search will show multiple versions of my best talk and a couple of other high-point talks I gave

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Robot learns to recognise itself in the mirror

TECHNOLOGY 15 August 2012

By **Hal Hodson**

Robot learns 'self-awareness'

August 24, 2012

Yale roboticists have programmed Nico, a robot, to be able to recognize itself in a mirror.

Using knowledge that it has learned about itself, Nico is able to use a mirror as an instrument for spatial reasoning, allowing it to accurately determine where objects are located in space based on their reflections, rather than naively believing them to exist behind the mirror.

Nico's programmer, roboticist Justin Hart, a member of the Social Robotics Lab, focuses his thesis research primarily on "robots autonomously learning about their bodies and senses," but he also explores human-robot interaction, "including projects on social presence, attributions of intentionality, and people's perception of robots."

Recently, the lab (along with MIT, Stanford, and USC) won a $10 million grant from the National Science Foundation to create "socially assistive" robots that can serve as companions for children with special needs. These robots will help with everything from cognitive skills to getting the right amount of exercise.

Hart's specific goal in this program: enable Nico to interact with its environment by learning about itself, and using this self-model, to reason about tasks — mainly ones for humans.

enlarge | +
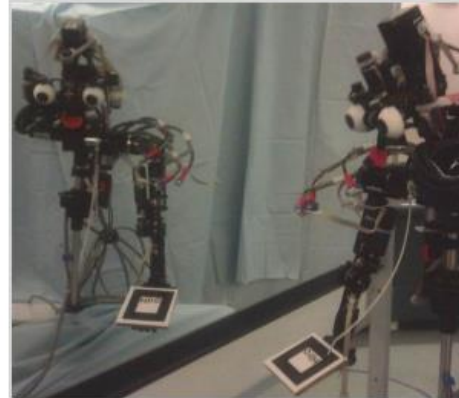
Who's that good-looking guy? Nico examines itself and its surroundings in the mirror. (Credit: Justin Hart / Yale University)

Technology

Robot learns to recognise itself in mirror

🕐 23 August 2012   f 🔵 🐦 ✉ < Share

A robot named Nico could soon pass a landmark test - recognising itself in a mirror.

Such self-awareness would represent a step towards the ultimate goal of thinking robots.

Nico, developed by computer scientists at Yale University, will take the test in the coming months.


Is that me?

The ultimate aim is for Nico to use a mirror to interpret objects around it, in the same way as humans use a rear-view mirror to look for cars.

"It is a spatial reasoning task for the robot to understand that its arm is on it not on the other side of the mirror," Justin Hart, the PhD student leading the research told BBC News.

So far the robot has been programmed to recognise a reflection of its arm, but ultimately Mr Hart wants it to pass the "full mirror test".

The so-called mirror test was originally developed in 1970 and has become the classic test of self-awareness.

More usually performed on animals, the creature is given time to get used to the mirror and is then anesthetized and marked on the face with odourless, non-tactile dye.
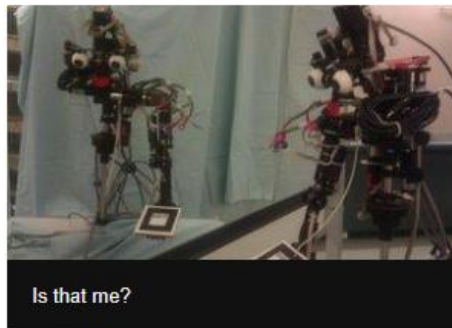
Conclusion

- The science is important, but how you present yourself is just as, if not more important.

- When I slump and call myself a failure, that is reflected back at me.

- When I hold myself up straight and project pride, people give that back to me too.

Conclusion

- The real difference is organization and preparation.

- Consider notable scientists and speakers and how they conduct themselves.
    - Chad Jenkins (one of my committee members) knew the outline of his talk before he did the research.

    - Ernest Hemmingway's life was a mess, but his writing was thoroughly edited and it paid off.

Tips

- Make your slides so that the viewer can catch up if they nodded off during your talk.
  - Many of you at least checked Facebook during this talk.

- The people watching your talk are generally people you want to impress.

- Your work should stand on its own. If you constantly pay credit to how smart you are, they'll remember that you're full of yourself, not your work.

Tips

- A good talk is about your final product. It's not a recap of what you did.
    - We wrote a program in python, but then it didn't work, so we wrote another one in C++, and got help from the TA…

    - Would you want to listen to that talk?

- Estimate 2 minutes per slide, minus your title slide.

- I've said it before, rehearse your talk, and if something doesn't work, change it.