What kind of videos?

- Short (about 3 minutes)
- Technical
  - Explain and demonstrate a method
  - (or) Make a claim and defend it
  - Video *should* have some technical meat!
- Audience
  - Engineers, but not subject-matter experts
  - Future EECS467 students
Structure

• 0:00-0:20  Bait
  • What is this video about?
  • Concise problem statement
  • Intriguing visual (perhaps a preview of the demo)
  • An unobtrusive text-overlay of your names & affiliation

• 0:20-1:00  Hook ‘em
  • A more careful problem statement, motivation. The 4 questions.
  • Explain what’s especially cool about your work (why should the viewer care?)

• 1:00-2:30  Explain your method.
  • Overlaying a step-by-step demo with voice-over (story telling) is effective

• 2:30-3:00  Conclusion
  • Put it all together. Show the whiz-bang demo, or re-state your claim and expand on its implications

• 3:00-3:15  Credits and contact information
The 4 Questions

• What’s the problem?
• Why is it important?
• Why is it hard?
• What did we do about it?
Filming - Equipment

- Use a tripod
  - No hand-held shots!
  - Want multiple perspectives? Use multiple cameras or multiple takes (no one will be able to tell!)

- Lighting
  - Hard to have too much (diffuse) light ==> better video quality
  - White balance

- Microphone
Filming Equipment: Cameras

- Consumer digital camcorders
  - Quite good quality these days!
  - Too easy to zoom/encourages sloppy ad-hoc video

- DSLR
  - Excellent quality
  - Really hard to zoom and focus simultaneously--encourages good technique

- Cell phones
  - Useful in a pinch (better than missing a good shot)
  - Very small lens: lighting is critical
  - Hard to put on tripod; brace against wall/table
(Anti-)Example

http://www.youtube.com/watch?v=M5zW58Ur1g8
Example

http://www.youtube.com/watch?v=7NfQlpUcATs
How-To: Lighting

http://www.youtube.com/watch?v=gkUqBjoxZ-I
Filming- Technique

• Don’t zoom unless you are attempting to achieve a specific effect.
  • And your tripod probably isn’t good enough to pan decently.

• Framing your subject doesn’t mean centering your subject. (Rule of thirds). Give subject a space to look into.

• Ensure all cuts have a couple seconds of usable footage on either side
  • You’ll need this padding for transitions

• Quality
  • Raw footage should be high bit-rate 1080/30, progressive scan
Typical Process

• Write a voice-over script
  • And edit, edit, edit.
  • Have a rough idea of what video/images you’ll use (storyboard)

• Record voice over
  • Use a high-quality microphone and set the gain correctly.
    • Make sure you can replicate recording conditions if you need to splice in edits.
  • Natural, conversational inflection
    • Not monotone, not radio-DJ

• Assemble a rough-cut of video
  • Get timings with the voice-over
  • You may decide to re-record portions of your voice over--- fine-tuning may be wasted effort.
  • Don’t start with black/blank video or a fade-in --- results in useless thumbnails.

• Tweak and tune
  • Insert transitions, adjust video in/out
  • Add text overlays
Editing techniques: Saving time

- Time is precious in a short video
- Robots are slow
- Show excerpted action
  - Jump cut
  - Match cut

http://www.youtube.com/watch?v=ONMSe_zhq70
**J-Cuts and L-Cuts**

**Cut**
Abrupt; can create a sense of motion (or disorientation)

**J-Cut**
Common use: establish a scene (wide-shot), L-cut to close-up

**L-Cut**
Common use: A close up (dialog or explanation), cutting to illustrative video
J-Cuts and L-Cuts Example

http://vimeo.com/20789680
The Editing Golden Rule

• The best cut is the cut that no one notices.
Style

• Avoid decorative transitions/wipes
  • The comic sans of video...star wipes.
  • Nobody ever got fired for a cross-dissolve

• Avoid template effects (including text-over) that is immediately identifiable
  • The “It’s my first iMovie project!” look

• Talking heads: not a good use of “video real-estate” in a short technical video.
Example

http://www.youtube.com/watch?v=9Lj-Gn5BM7A
Example

A generative traversability model for monocular robot self-guidance

Supplementary material, ICINCO 2012

Michael Sapienza and Kenneth P. Camilleri
Department of Systems & Control Engineering
University of Malta

March 2012
[video speed increased for brevity]

http://www.youtube.com/watch?v=bo7Es3j5Egk
Example

Fast and Accurate Knife-Edge Maneuvers for Autonomous Aircraft

Andrew Barry  
Anirudha Majumdar  
Tim Jenks  
Russ Tedrake

Huai-Ti Lin  
Ivo Ros  
Andrew Biewener

Robot Locomotion Group  
MIT/CSAIL

Concord Field Station  
Harvard University

https://www.youtube.com/watch?v=voN9CCmzxYk
Tools

• CAEN machines have Adobe Premiere

• iMovie is quite tolerable. Final Cut Pro fixes a few warts, but $$$

• Linux tools are awful :(
Final Result

- Encoded with HandBrake; h264 in mp4 container. (Universal preset should be good)

- Adjust quality/resolution so that output file is around 2-10 Mb/s
  - Total file around 50-200MB
  - YES: 1080p, 720p, 4:3, 16:9
  - No: 480i, 9:16.

- No YouTube, DropBox, etc. for submission
What to do now

• Start collecting video, still images, computer rendering.
• Shove them in a folder for use later.
• Make sure they are of usable quality.
B-Roll Bonus Material

http://www.youtube.com/watch?v=SltFvB0Upb8