

Video Capture Project

This project is designed to be a mini independent project. You will design an experiment, conduct and video the experiment, analyze the data, and present your results in an oral format.

1. Design an experiment: You will pick an project that can be studied by collecting the data with a video camera. The experiment must be able to be analyzed visually because you will be using video analysis. You will write an experiment proposal that will contain the following aspects.
 - a. The system you are proposing to study
 - b. What quantities do you propose to hold constant, and what quantities do you propose to vary?
 - c. Which video camera will be most appropriate—high speed or regular (see handout)?
 - d. Where will you conduct your experiment?
 - e. What equipment will you need other than the video equipment.
 - f. How do you propose to analyze your data? Do you have a model in mind? What are the model variables?

Your proposal should be well thought out and typed. You are encouraged to meet with your instructor to discuss possible experiments.

2. Conduct the experiment: You will locate the necessary equipment to conduct your experiment. You will set up the experiment and video it. You will need to include objects of known length in the video so that you can calibrate the data. Make sure that you use bright lighting and fast enough shutter speeds.
3. Analyze the data: The video tape will be digitized using a computer and an IEEE 1394 card (firewire). The digitized video can be turned into data that has time and position (x-y coordinates) using a variety of computer software programs. Once you have the data, you need to determine whether or not it matches your theoretical predictions. If it does not match your prediction, you should find out why.
4. At the end of the semester, you will present your results in a video capture symposium on the date indicated in the syllabus.
5. You will not need to write a lab report for this project, but keep your lab notebook as usual. Don't forget to include in your notebook names of data files, copies of data tables, the theory behind the experiment, and graphs and mathematical predictions plus any other relevant stuff.