

PROJECT ASSIGNMENT  
ME EN 7200 NONLINEAR CONTROLS- SPRING 2003  
Due: 4:30 PM Monday April 28, 2002 in 145 KNNB

In this project assignment, you will first perform a literature search in an area of interest to you where non-linear control is used. This “area of interest” must be different than your thesis research topic if you are doing controls research. You will then write a brief report on your findings that focuses on one paper in particular.

Report requirements:

1. Introduction: Describe the “area of interest” you have selected and why non-linear control is applicable.
2. Background: Briefly describe several different nonlinear control techniques used in this “area of interest”. What are the benefits and limitations of these techniques? Which of these do you feel is most beneficial? Why? Cite the papers supporting your description and argument. At least three papers (and corresponding control variations/techniques) are preferred. Please attach the first page of all of these papers (at least the abstract and part of the introduction must be shown).
3. Control Development: Select one of the aforementioned papers that appears to be the most beneficial and describe the methods and techniques used to derive the controller in greater detail. Attach this paper to the end of your report. If it is more than six pages in length, only attach the first six pages.
4. Conclusions: Briefly summarize your report and findings.
5. References: Numbered IEEE format required. Indicate authors, name of paper, source, volume, issue, pages, and year. An example (note this is from volume 40, issue 1):  
[1] Samson, C., "Control of chained systems application to path following and time-varying point-stabilization of mobile robots," *IEEE Transactions on Automatic Control*, **40**(1), p64-77, 1995.

Detailed information:

1. Report Format: 1.5 line spacing. 11 point times roman font. 1” Margins. Four pages maximum (not including the title page and attached papers).
2. Grading:
  - a. Writing quality (25%). Your report must be clear, concise, and well structured. Poor writing is unacceptable.
  - b. Introduction (10%)
  - c. Background (15%)
  - d. Control Development (30%)
  - e. Conclusions (10%)
  - f. References (5%)
  - g. Attached papers (5%)

Recommendations:

Use electronic literature resources wherever possible:

1. Databases such as Inspec are provided by the library and can be accessed from any computer on campus or from home if you use a proxy server. Inspec can be accessed directly at <http://axiom.iop.org/S/UTAH/search> or from the Marriot Library Webpage [www.lib.utah.edu](http://www.lib.utah.edu).
2. Once you find an article you would like to retrieve, check the library holdings for the journal or conference proceedings at <http://www.lib.utah.edu/information/unis/index.html>. UNIS will show both electronic and shelved holdings. Obviously electronic is preferable for time savings. For example, almost all IEEE publications are available online at <http://ieeexplore.ieee.org> in PDF format. Again, these electronic resources are accessible from any computer on campus or via proxy server from home.
3. Feel free to ask for feedback on your “area of interest” and the papers you are considering.