

---

## CSCE574 – Robotics

### Spring 2014 – Guidelines for Graduate Student Papers

---

In addition to the other requirements, graduate students in this course must write a paper that explores some aspect of robotics more deeply than we cover in class. In most cases, I expect this exploration to follow this procedure similar to this:

1. **Choose** a topic. More specific is almost always better!
2. **Read** about this topic in one or more textbooks.
3. Use these textbooks and the Internet to **find** the published academic research papers that make substantial contributions on this topic.
4. Critically **read** and **understand** several (say, 4-6) of the most interesting or most important of these papers.
5. **Synthesize** the content these papers by noting their similarities, differences, strengths, weaknesses, etc.
6. **Propose** one or two new ideas that might address the weaknesses you saw, or answer questions that were left unanswered.
7. **Write** a paper of approximately 10 pages to document your findings. Your paper should convince the instructor that you succeeded at each of the previous 6 steps. Cite the papers and books you consulted, using complete and correct citations.

For graduate students already working on established research projects, it is especially encouraged to use this project as a chance to find and investigate connections between robots and your existing research.

**Topic ideas:** Here are a few ideas to jumpstart your topic selection.

- Minimalist robotics: What can be accomplished with limited sensing?
- Multiple-robot coordination: How can lots of robots work together?
- Pursuit and evasion: Robotic hide-and-seek.
- Sampling-based motion planning: Moving a piano through a cluttered house.
- Sensor networks: Groups of “actuation challenged” robots.
- Probabilistic localization and/or SLAM: Efficiently manipulating probability distributions.
- Rehabilitation robotics: Can robots help people recover from injuries and disabilities?
- Specific applications of robotics (provided you can find academic research on the subject)
- . . .

**Deadlines and deliverables:** There are three deadlines for this project.

- ✓ Topic choice with one page abstract – Due March 7.
- ✓ Reference list – Due April 1.
- ✓ Completed paper – Due April 24.

---

## Evaluation criteria

### Abstract (10):

- Abstract is submitted on time.
- Abstract describes a topic that is relevant to the content of the course.

### Reference List (10):

- Reference list submitted on time.
- Reference list includes at least 4-6 academic research papers that make substantial contributions on the topic.

### Content (60):

- Topic is narrow enough to be covered in the paper.
- Paper presents any essential background material clearly.
- Paper cites and summarizes published academic research papers on its topic.
- Paper synthesizes published results.
- Paper contains comparisons and contrasts between published results.
- Paper proposes new ideas to make progress in the topic area.

### Presentation (20):

- Paper is complete.
- Paper has correct length.
- Writing style is appropriate and professional.
- Paper is mostly free from grammar problems and typos.
- Paper contains helpful figures where appropriate.
- Paper has consistent formatting.