

CS269: HW/SW Engineering of Embedded Systems




CS269
HW/SW Engineering of Embedded Systems

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CS 269: HW/SW Engr. of Embedded Sys

- Lecture
 - EBU2 Room 315
 - TuTh 12:40PM-2PM
- Laboratory
 - none.
- Exams: none.
- Quizzes: none.
- Textbooks: none.
 - All material available online.



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Instructors

- Lecture: Harry Hsieh
 - www.cs.ucr.edu/~harry
 - harry@cs.ucr.edu
 - Office (787-2030)
 - Engr2 339, TuTh 11AM-noon
 - Check www for rescheduling and cancellations
 - Also available
 - by appointment
 - Class Web Page
 - www.cs.ucr.edu/~harry/cs269




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Grades

- Class Presentation: 45%
- 3 papers from
 - Design Automation Conference 2004, 2005
 - 6 pages each
 - 22 selected papers and slides are provided on class website
 - Additional papers can be selected from www.dac.com
 - Design Automation and Test in Europe 2004, 2005, 2006
 - www.date-conference.com
 - International Conference on Computer Aided Design
 - www.iccad.com




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Grades

- Class Presentation: 45%
- 3 paper presentations / student
 - You may add more slides for clarification
 - You should do enough background reading to understand the paper
 - ENTIRELY, because:
 - Questions from audience are encouraged
 - Questions from me are guaranteed




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Grades

- Class Presentation: 45%
- Send me paper preference and time-slot preference
 - By Thursday (4/6)
 - Provide me with a few that you want
 - You may change your mind later on
 - Depending on availability




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How to do a paper presentation

- Tell a story
 - Not just a collection of facts
- Emphasize the main idea and motivation
- Highlight the result and and lesson learned
 - What is it good for?
- Outside research
 - Read up on foundational material
 - Send e-mail to authors for clarification





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Grades

- Projects: 45%
- Individual project
 - Can be similar to your thesis work
 - Can be your thesis work
 - A list is available on the website
 - Mandatory weekly 30 minutes meeting for
 - Checking progress
 - Checking direction
 - Suggestion solution to problems





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Grades

- Projects: 45%
- Individual projects
 - Data centric MPSOC design
 - Co-processor coupling
 - SystemC deadlock analysis
 - C-VHDL translation
 - Energy profiling
 - RTL-Gate correlation





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Grades

- Projects: 45%
- Individual project
 - Project Introduction Presentation
 - Present to class on motivation, plan, goal, etc
 - Project Final Presentation
 - Present to class on motivation, method, result, etc
 - Reports
 - Progress #1 (2 pages)
 - Progress #2 (4 pages)
 - Final (6 pages)





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Grades

- Attendance: 10%
- Attendance will be taken for all presentation/meeting
- Unexcused absence will be penalized





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Grades

- 45% presentation 45% project 10% attendance/participation
- No regular meeting on Thursday
- Sign up for discussion time slot
- Thursday 4/6, in my office
 - 10:00-10:30 Scott
 - 10:30-11:00 Vi
 - 11:00-11:30 Eric
 - 11:30-12:00 Malcolm
 - 12:00-12:30
 - 12:30-1:00
 - 1:00-1:30
 - 1:30-2:00




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How to write a technical paper

- **Recursiveness 1**
 - In every section, the first paragraph should be a summary/overview of the section. You can actually start by saying: "In this section, we present..."
- **Recursiveness 2:**
 - In every paragraph, the first (or second line) should correspond to summary of the paragraph.
- **Top-Down:**
 - Start from high level and start increasing the details slowly.
 - Prepare the reader:
 - Reports are not suspense thrillers. The reader should have an idea of where you are trying to get at.
- **Total Paper length: ~6 pages.**




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How to write a technical paper

- **Abstract**
- **1 paragraph 200-300 word**
 - This is the ad and trailer for the paper
 - It has to be an executive summary of your work in such a way as to attract attention and get the reader to read more.
 - Think of how you would explain the work to your office mate]
- **1-2 lines: goal of this paper**
- **1-2 lines: motivation and importance of work**
- **1-2 lines: per result or contribution of our work**
 - it is good if you can quantify your claims with numbers that refer to intuitive or easily explainable metrics i.e. 50% faster]




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How to write a technical paper

- **Introduction (3/4 – 1 pages)**
- **What is the problem, motivation, importance, main contribution**
- **One paragraph each:**
 - The problem: high level definition, significance
 - Previous work
 - at most one line per relevant paper, leave details for next section
 - Our contribution: possibly list of results and contributions
 - Our method: quick once over about the essence of our work
 - "The rest of this paper is structured as follows. In section 2,....."




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How to write a technical paper

- **Background and Model (3/4 – 1 pages)**
- **Definitions, scenario, model**
- **One paragraph each**
 - Previous work
 - provide details only if this will help show where your work is different or better. Make sure you reference all related work.
 - Weaknesses of previous work or the absence of the thing you are proposing
 - Assumptions and limitations of your work.
 - Be honest, but don't condemn your work




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How to write a technical paper

- **Our Idea (1.5 – 2 pages)**
- **The innovation**
- **New definitions, if necessary**
- **What it is and how it works**
- **Explanation of fine points, clarifications**




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How to write a technical paper

- **Analysis and experimental setup (0.25-0.5 pages)**
 - How to demonstrate the usefulness of your result
 - Why the simulation model or measuring infrastructure
 - Experimental setup, case study explanation
- **Experimental Results (0.5 – 1 page)**
 - what we do measure, what we done
 - each plot should have a clear reason for appearing
 - (ie with more load we get worse throughput)
 - explain each plot:
 - the axis, what we see, what is the trend, why this is the trend
 - statistical comments will strengthen your results:
 - confidence interval, correlation coefficient etc.
 - Each figure should be fairly stand alone and self explanatory:
 - captions should be readable and understandable.
 - Comments, discussion, explanations




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Page count



- **Abstract**
 - 0.25 pages
- **Introduction**
 - 1.25 – 1.5 pages
- **Background**
 - 0.75-1 pages
- **Main idea**
 - 2 – 3 pages
- **Analysis/experimental setup**
 - 0.50-0.75 pages
- **Experimental result**
 - 0.75-1 pages
- **Conclusion**
 - 0.25 pages
- **Reference**
 - 0.25 pages
- **Total 6 – 8 pages**




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How to do a good project presentation

- Utilize graphics and tables 
- Emphasize the main idea and motivation 
- Highlight the result and and lesson learned
 - What is it good for?
- The logical flow should be from big picture to detail
 - Not the order you conduct research




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How to do a good presentation

- Have at least one major message per slide
 - Meaningful slide title
- Emphasize primary idea
 - Give a “flavor” of the detail, not all the details
 - Only to support the main idea (i.e. what’s the story?)
 - Start with “high level”, then go down
 - E.g. CS122B deals with modern embedded and real-time issues such as
 - Design principles
 - What are they...
 - Real-time programming issues
 - Scheduling, atomic action, synchronization...
 - Low power design
 - Safety
 - Design Technology






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Other “technical” pointers

- No more than ~12 lines of text
- Avoid long sentence, use bullets
 - Having grammatically correct long sentence written down tend to encourage reading the slides by both the presenter and the audience, which will distract from the actual presentation.
 - In principle, avoid multiple-line “bullets”
 - Used as reminder/summary
- Graphics and animation are good
 - Gratuitous graphics and animation are not
 - Google for them, or get cliparts (microsoft...)






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Structure of a 25-minute talk

• Title	1 slide
• Problem addressed	2 slide
– What is the problem?	
• Motivation/Importance	4 slide
– Why is this important?	
• Background/Model/Definition/Previous work	4 slides
– What are some of the previous attempts?	
– What are some of the related attempts?	
• Procedure	10 slide
– How exactly is it accomplished?	
– What are the innovation/contribution	
– Higher level idea first	
– Some example of detail	
• Outcome/Result	3 slides
– What exactly is the result?	
– What is the impact?	
• Conclusion and future direction	1 slide



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