Master Thesis Project

Sławomir Nowaczyk

Course Basics

30 credits course

- 20 weeks of full-time work
- 800 (!) hours of work (per person)

Web pages:

https://tinyurl.com/HH-ITE-MSc

https://hh.se/student-web/content-a-z/thesis-information-for-students-at-school-of-information-technology.html

http://caisr.hh.se/Student_projects

HALMSTAD UNIVERSITY

Goal

…provide training in independent technological/scientific research and development work within the field of Embedded and Intelligent Systems in Computer Science and Engineering

Examiners

- Embedded Systems
  - Alexey Vinel
  - Mohamed Eldefrawy

- Intelligent Systems
  - Slawomir Nowaczyk
  - Fernando Alonso-Fernandez

Learning Outcomes

- **Independently** search for solutions

- Use advanced methods of analysis and construction

- **Discuss** the international research and development

- **Assess** scientific papers

- **Relate** own work to international research

- **Present and defend** own work

Grading Criteria

- Overview & understanding of needs and related work
  - Highlight weak & strong parts in referenced works and how it differs from the own work

- Understanding and refinement of problem/research questions
  - Identify methods needed to investigate the problem and answer the questions

- Method & setup of study/experiments to get & evaluate results
  - Define enough tests/measurements to get sufficient results & evidence for conclusions

- Solution of problem or answer of question and other results
  - Solve problems, create & evaluate feasible solutions, analyse the quality of results

- Initiative, creativity, ambition, planning and organization
  - Use feedback from supervisor for reflection, rather than asking for solutions

- Final oral presentation and final report
  - Results and the conclusions are clearly stated, discusses different aspects of the problem

Core Requirements

- Understand the problem
  - in context!

- Formulate research question(s)
  - novelty!

- Develop a solution
  - in context!

- Evaluate the results
  - rigorously!

- Summarise the findings
  - conclusions!

Process

Process Overview

- Topic selection
  - until Sunday, 27th of October, 15:00

- Start report
  - report December 6th, presentations 9th and/or 11th

- Half-time seminar
  - middle of March

- Final seminar
  - end of May

GRADED!
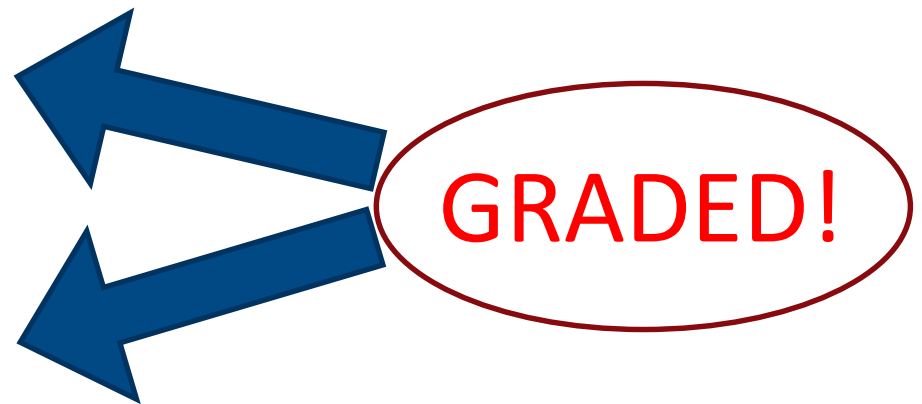
Topic Selection
(check prerequisites!)

- Look at list of proposed topics
  - talk to supervisors to learn more

- Topics are mainly updated in September
  - there might be new topics still popping up
  - it's possible to propose your own topic,
    but you need to find a supervisor from ITE

- Provide ranking of three preferred topics
  - by Sunday, 27th of October, 15:00 (GoogleForm)
  - you can also indicate preferred partner (but no guarantees)

Start Report

- Deadline is 6th of December
  - for sending to the examiner!

- Needs to be approved by supervisor first
  - and you need time to incorporate their feedback

- So a reasonable schedule is:
  - 25th of November send report to supervisor
  - 2nd of December you get feedback
  - you have a few days to address the comments

Start Report

- Approximately five pages of text
  - please use the provided LaTeX template

- Report should cover three main aspects
  - problem formulation
  - literature review
  - project plan & management methodology

- A short presentation on 11th of December
  - 10 minutes

Problem Formulation

- What you are going to do and why

- How will the result be evaluated

- Presented in a way that makes it clear what you your intended contribution is

- Put the emphasis on the novelty of your work, not only on the task itself

- Do not focus too much on implementation

Literature Review

- You should discuss 5+ research papers

- Well-chosen, i.e., ones that really provide sufficient coverage of your main topic

- Provide reasons for including particular papers, clearly relate them to your project

- Discuss how your work will extend the solutions presented in the literature

Project Plan

- Present the main tasks to achieve the results
  - this should be more detailed than 5-6 broad phases
  - split your problem into meaningful sub-problems
  - including some form of success criterion for each!

- Provide order and the expected timeline
  - including dependencies across tasks, and conditions

- Try to keep it realistic
  - e.g., do not forget "report writing"

- Follow a "real" project methodology
  - preferably something agile

Supervision

- It is not instruction!

- Support, guide and tutor

- Keep regular meetings

- Ask questions!

- But be independent!

- Track the contributions in a group

Science

- Be clear about the science part of it, do not only focus on the engineering aspect

- What have you learned during the project?

- How can your findings benefit the next person trying to solve a similar problem?

- What are the limits of applicability for the solutions you have proposed?

Reasoning & Comprehension

- You need to demonstrate the ability to reason about both problems and solutions

- The learning outcomes and grading criteria focus a lot on comprehension skills

- Not enough to solve the stated problem, you need to describe and evaluate both your solution, as well as your methods

HALMSTAD UNIVERSITY

Conclusions

- When stating your conclusions, it is not enough to just describe work done

- You need to put your work in context

- Demonstrate the novelty in the project
  - where did you go beyond the state of the art

- Be clear about evaluation of your results
  - how good they are, why those methods were chosen, how to proceed next, lessons learned, …

Report

Report Writing

- Refer in text to all figures and tables
  - explain their purpose, not only what they show

- Provide full bibliography references
  - pick whichever style you prefer, but don't mix them

- Use clear and consistent notation in text
  - font for scalar and matrix, explain abbreviations, …

- Use sections & subsections for readability
  - choose their titles and their contents carefully

Materials

Useful Material

- [Course syllabus](#)

- [Course description](#)

- [Grading criteria](#)

Questions?