ROYAL INSTITUTE
OF TECHNOLOGY

Master thesis intro

Johan Karlsson

Optimization and Systems Theory, Department of Mathematics
Royal Institute of Technology (KTH)

SF280X Optimization and Systems Theory
SF281X Systems Engineering
others... (e.g., SF278X, SF290X)

Master thesis intro

- Introductory round
- Overview
- The report
- Process
- Presentation
- Questions

Master thesis intro

Johan, short bio:

- MSc KTH Engineering Physics, 2003
- PhD KTH Optimization and Systems Theory, 2008
- Sirius International 2009-2011
- Postdoc, University of Florida 2011-2013
- Faculty KTH 2013-

Introductory round:

- Name, program, short about the project

Master thesis intro, Overview

- Read in seminar
- Report
- Opposition
- Final presentation

Master thesis intro, Report

- Write in Swedish or English. We recommend English.
- Include Title and Abstract in both Swedish and English.
- We recommend using Latex for the report.
- Short guide on mathematical writing: `http://web.cs.ucdavis.edu/~amenta/w10/writingman.pdf`
- Avoid difficult language.
- Follow citation standard.
- Equations and citations belong to sentences.

For more details, common mistakes, tips and guidelines, see `https://people.kth.se/~johan79/exjobb/index.html`

Master thesis intro, Process 1

- You are in charge of the project
- I am available for meetings and discussions
  - Regular meetings Tuesday afternoon
  - Other times available if needed
  - Email me what you want to discuss the day before the meeting (short message OK).
- Make a time plan (report writing takes longer than you think)

Master thesis intro, Process 2

About working with a larger projects:

- Beginning: focus on the mathematical model and the tools.
- Always start with as simple model as possible but that is still relevant to the question at hand. Understand this case in detail. If you don't understand the easy cases you will not understand the more advanced cases.
- When reading papers, write down (short) summaries of relevant results. Write down the details that you think may be useful right away. In a month or two you will have forgotten the details.
- Make sure to set aside enough time for the writing (dedicate at least 1-2 months for this).

Master thesis intro, Presentation

Focus on the mathematical part. Make sure to include:

- Problem formulation
- Describe the mathematical model in detail and explain how it is used to model the problem (Model, parameters, variables, objective function, etc.).
- Describe the data and how it was used to determine the model and parameters of the model.
- Show, explain, and interpret the results (do not tell the audience to look in the report to see the results).
- Discuss model shortcomings and weaknesses. What assumptions do not match with reality.

Master thesis intro, Questions

- Most of this, and more details are available at `https://people.kth.se/~johan79/exjobb/index.html`
- Questions?
- Set date for read in seminar!