Seminar on Model Checking

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Practical arrangements, introduction, choosing topics
September 3, 2019

Key Aims for Today

- Understand the course requirements
- Choose a topic to work on
- Get some idea of what is model checking (in the context of this seminar)

On the Seminar Topic

From *Handbook of Model Checking*:

Model checking is a computer-assisted method for the analysis of dynamical systems that can be modeled by state-transition systems. Drawing from research traditions in mathematical logic, programming languages, hardware design, and theoretical computer science, model checking is now widely used for the verification of hardware and software in industry.

On the Seminar Topic

Note:

- The seminar is intended for MSc students with interest in discrete algorithms, computation and in particular the use of formal logic and automated reasoning to verify the correctness of hardware and software.
- Students majoring in mathematics, in particular mathematical logic, are also encouraged to attend.
- PhD students are also welcome.
- A certain level of algorithmic and mathematical maturity is expected from the participants.

Practical Arrangements

Course Information

Instructors:	Prof. Keijo Heljanko, Prof. Matti Järvisalo
	{keijo.heljanko,matti.jarvisalo}@helsinki.fi
Credit units:	5 ECTS
Language:	english
WWW:	https://courses.helsinki.fi/en/csm12116/129911924
Announcements:	seminar webpage, email
Reception:	Contact instructor(s) by email for an appointment. or during seminar meetings

Course Requirements

- Choose a topic (scientific chapter/article) to study
- Write a 10-15 page (plus references) report on the topic
- Give a 40-min presentation on the topic
- Peer-review of the reports of two other students (draft and final versions)
  - or hands-on project work
- Act as the opponent of another student's presentation
- Actively attend the seminar

Grading:

- On scale 0–5
- Report 50%, presentation 50%,
- Peer-review & activity (incl. being an opponent) ± 1 grade

Deadlines

- All deadlines are strict you will fail the course if you do not meet a deadline
  - Need proof of illness to postpone deadlines
  - . . . or let us know well in advance to make rearrangements
- Today: choose topic and presentation date
- Presentations: during period II, Oct 29 – Dec 3
- One week before your presentation: preliminary report & slides
  (send to instructors by email)
- On presentation day:
  Presenters: arrive early to set up slides etc.
  Opponents: actively ask questions during & after presentation
- December 6: peer-review version of report
- December 13: peer-reviews
- December 20: final version of report

Choosing a Topic

Topic = 1-3 chapters/articles from the list on the course webpage

- 12 topics available, everyone needs to choose one
- Can suggest a topic+articles outside the list!
- You will likely need to read additional articles for necessary background
- Reserve topic no later than Sep 10 (within one week)
  - Preferably already TODAY!

Report

- A seminar report is a short review paper:
  you explain some interesting results in your own words.
- A typical seminar report will consist of the following parts:
  - an informal introduction,
  - a formally precise definition of the problem that is studied,
  - a brief overview of very closely related work: here you might cite approx. 10 papers and explain their main contributions,
  - a more detailed explanation of one or two interesting results, with examples
  - conclusions.
- Superficially, your report should look like a typical scientific article.
  - However, it will not contain any new scientific results, just a survey of previously published work.

Presentation

- The presentation is an overview of the report
  - You should understand what you are saying
  - Everyone should understand you
  - The abstraction level should be right
  - Examples are always good to communicate ideas

Let us know in case you won't be able to present on a specific week during period II

Templates

- Use of Latex especially for the seminar report is strongly encouraged
- Latex template for the report available via the seminar webpage
- For the presentation, use software of your choice
  - If you use latex, look into the beamer package

Some Words of Advice

- Start working on your topic early!
- Depending on your background, you will very likely need to read additional papers for background
- Aim at understanding the key aspects of your topic – do not get side-tracked
- You are responsible for figuring out the details
  - The instructors will not teach you all necessary background
  - In case you get completely stuck, contact the instructors
  - You will need to show that you have made a serious attempt to understand the topic by yourself

Introduction

Choosing Topics & Dates

Select a topic from the list on the seminar webpage under "Materials"
or suggest your own topic related to the seminar.