MT4113, Computing in Statistics

Lecture 0 - Introduction to Module

17 September 2018

Welcome to MT4113 Computing in Statistics!

Module instructors:

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Module tutor:

- Fanny Empacher fe21@st-andrews.ac.uk (mailto:fe21@st-andrews.ac.uk)

Why am I taking this module? I

This module will:

- Help me get a job (in industry or research)
    - Computers are essential tools in both pure and applied statistics, and most other walks of life
    - Many job applications require experience with given computer packages
    - Here, we'll be using one of the dominant packages in statistical computing: R

Why am I taking this module? II

This module will:

- Help me keep that job
    - Sooner or later, we need to automate a set of tasks, or extend software to perform new tasks
    - For this to go smoothly, we need to know how to write efficient, re-useable programs that work
    - Good programming practice will be a major theme of this module – a very transferrable skill

Why am I taking this module? III

This module will:

- Help me out of trouble
    - Many statistical methods make strong assumptions about the underlying distribution of the data.
    - By contrast, we will (briefly) cover some some simple, robust, computer-intensive methods that are very powerful yet make only weak assumptions about the data.
    - We will also cover methods for optimizing functions – useful for things like maximizing likelihoods.

Why am I taking this module? IV

This module will:

- Help me with other modules

    - R and general programming skills will be useful in other modules and project work.

Why am I taking this module? V

- Err… my course requires me to take a computing module and this looked the least worst option!

Approximate Syllabus

- Fundamental programming principles (Len & Eiren), Weeks 1-3
- Computer-intensive statistics (Len), Weeks 4-5
- Optimization methods (Eiren), Weeks 7-8
- Code performance, reprodcibility and graphics (Eren & Len), Weeks 9-10

Timetable

- Format: Mix of lectures (Monday LTC, Wednesday LTA, 12-1pm) and computer practicals (Friday Comp. classroom, 12-2pm)
- Drop-in help sessions: Likely to be Wednesday 1-2pm LTC, with Fanny
- Assessment: 60% in-semester assessment; 40% final exam
    - 1 smaller programming assignment, worth 10%.
        - Peer review exercise, for additional feedback.
    - 1 group programming project, worth 20%.
        - 1 larger programming project, worth 30%.
- Module web site: on Moodle
    - Includes fora (news and help), lectures, projects, additional material
    - The Moodle site is the module handbook.

Deadlines

- Published on the module web site
- University late coursework policy is linked on the web site
- If you have a registered request for flexible deadlines, please discuss this with me or Eric at the end of this class

Attendence Monitoring

New University-level policy

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As with all 3000-5000 Level taught modules in the School of Mathematics and Statis
tics
attendance will be monitored at various points over the semester. This is to compl
y with UKVI
regulations and to monitor student wellbeing.  For MT4113 attendance will be taken
at the practicals
of Friday 12th October and Friday 16th November.
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Notice

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    This module requires considerable time investment to reach your potential (nom
inal work
    load for all 15 credit modules is 150 hours, including class time).
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