Online tools for the teaching of the R programming language

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October 2014

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The Current Situation

- Statistical software is used in many industries.
- An important skill for employability.
- Use of statistical software in teaching fosters deeper learning.
- Use R in a range of courses.
- Initial teaching occurs in first year.
- Utilized in a number of courses in later years, for example:
  1. Stochastic Processes (level 9)
  2. Probability and Statistics (level 8)
  3. Time series (level 10)

The Need for Change and Innovation

- Currently teaching of R is ad-hoc.
    - Different styles of worksheets.
    - Some lectures provide videos on VISION.
    - No coherent student experience.
- Courses to be taught over multiple campus.
    - Current methods need over hauling to deal with this change.
- Aim:
    1. Explore use of novel technologies to improve teaching of R.
    2. Provide students with a uniform learning experience across campuses and courses.
    3. Enable students to learn at their own pace.

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Solution?

Back-end Development

- Project focused on the development of a back end for online teaching of R.
- Implemented by a summer intern (Ross Brunton).
- On-line interactive worksheets tied with a R back end to allow code to be run.
- Enables student to run code and auto-checking of code.
- Provides a flexible framework for writing course material.
- Enables lecturers to prepare and update course specific material.
- Inbuilt tracking of student progress.

Engaging the Rest of the Department

- Engaged lecturers of first two years courses to understand needs.
- Collected current teaching material and explored current good practice.
- Arranged a demonstration afternoon including presentation and hand on sessions.
- Positive feedback from lecturers and students.
- With the help of various lecturers currently implementing current teaching material.

Current State and Future Steps

- Initial back end is complete but ...
- does not have a permanent server to run from.
- Aim to set this up this semester with support from MACS.
- This will enable wider uptake.
- Future plans:
  1. Continue the transfer of material.
  2. Explore possibilities for future funding to continue development.
  3. The implementation of auto-generation of questions and auto-checking.
  4. The implementation of assessments.