Efficient R Programming

This course is for anyone who wants to make their R code faster to type, faster to run and more scalable. During the course, we'll cover the main R sins (and how to avoid them), dabble with hardware, look at running in parallel and think about efficient R data structure. This course should be useful to people with a range of skill levels.

Course Outline

- **Why is your code slow?** Code profiling: which part of the code should you optimise.
- **Efficient data structures**: Object growth and memory allocation.
- **Avoiding loops**: Accessing the underlying C code faster.
- **Parallel computing**: An introduction to multi-core computing.

Jumping Rivers staff quite literally wrote the book on Efficient R programming. Dr Colin Gillespie, a consultant at Jumping Rivers and Senior Statistics Lecturer in the School of Mathematics & Statistics at Newcastle University is the author of the recent O'Reilly book.

Learning Outcomes

Session 1:

By the end of session 1, participants will...

- have an understanding of how computers use memory and test their RAM using {benchmarkme}.
- know what benchmarks are and have the ability to use {bench} to identify which areas of R code needs optimising.
- have a good understanding of how to efficiently manage memory within an R session.

Session 2:

By the end of session 2, participants will...

- understand the common efficiency mistakes made within R scripts such as object growth and object creation.
- understand why efficiency mistakes slows down code and how to apply faster alternatives.
- have the ability to improve the efficiency of R code using the {parallel} package for parallel computing.
- be able to avoid the key R sins of inefficiency, such as vector growth.

This course does not include:

- Specific efficient R programming for collaboration, but following the key takeaways from the course would help.
- Specific efficiency tips for the {tidyverse}, but the ability to test your own code is taught.

Attendee Feedback

- "Good course - it did what I expected and I learnt some things that will be useful for my work going forward."