

Statistics Seminar

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4:15 pm

G01 Biotechnology

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Statistical Computing in Julia

Julia (www.julialang.org) is a new language for technical computing. Those familiar with other such languages often see it as "a faster Matlab/Octave, R, Python, ..." because it is based on a Just-In-Time (JIT) compiler provided by the LLVM project (www.llvm.org). It is true that Julia code can be quite fast but concentrating only on speed of execution for familiar code idioms is missing the point. Julia is a new language design based on generic functions, multiple dispatch, a sophisticated type system including user-defined types and template types, and compilation of methods to machine code. There are examples, some of which I contributed, of implementation of the same simple algorithm in R and in Julia the purpose of speed comparison. In this talk, however, I will describe a much larger project of reimplementing the facilities of the lme4 package for R in the MixedModels package for Julia. Although the MixedModels package is entirely coded in Julia, whereas the lme4 package does the heavy lifting in C++ code using the Eigen numerical linear algebra library, the MixedModels package ends up being much more flexible, reliable and often much faster.

Refreshments will be served after the seminar in 1181 Comstock Hall.