Seamless R and C++ Integration with Rcpp: Introduction and Examples

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Raum A 017, Hauptgebäude, Geschwister-Scholl-Platz 1

The R system for statistical computation and graphics (R Core Team, 2014) has become a pre-eminent platform for data-related research. Its focus on "Programming with Data" has lead to widespread use in data analysis, visualization, statistical computing and general statistical research.

Within the R environment, Rcpp (Eddelbuettel and Francois, 2011; Eddelbuettel 2013) has become the most widely-used language extension. Rcpp permits effortless and seamless bi-directional interchange of objects between the R system and C++ code — covering anything from data containers such as vectors, matrices, and lists to complete (and possibly nested) objects, functions and environments.

The ability to seamlessly connect R and C++ enables data analysts and researchers to obtain substantial speed gains for tasks which are often slow in R (particularly loops, or repeated function calls) with very little effort. It also permits creation of larger-scale projects connecting R to other C++ components or libraries which can take full advantage of the features, and performance, of the C++ language.

This talk will both motivate and introduce Rcpp, and then discuss a key application area. A general overview of Rcpp, suitable to anybody with basic R experience and limited or no C++ knowledge.

Speaker: Dirk Eddelbuettel has been a contributor to the CRAN code archive for R for over a decade, and maintains over twenty packages including Rcpp and a number of packages deploying Rcpp. He is the Debian/Ubuntu maintainer for R and other quantitative software, edits the CRAN Task Views for Finance and High-Performance Computing, is a co-founder of the annual R/Finance conference, and an editor of the Journal of Statistical Software. He holds a Ph.D. in Mathematical Economics from EHESS (Paris), and works in Chicago as a Senior Quantitative Analyst.