



## Developing Fortran Code for Kriging on the Stampede Supercomputer

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### Abstract

Kriging is easily accessible in the open source statistical language R (R Core Team, 2015) in the `gstat` (Pebesma, 2004) package. It works very well, but can be slow on large data sets, particular if the prediction space is large as well. We are working on the Stampede supercomputer at the Texas Advanced Computing Center to develop code using a combination of R and the Message Passage Interface (MPI) bindings to Fortran. We have a function similar to the `autofitVariogram` found in the `automap` (Hiemstra *et al*, 2008) package and it is very effective. We are comparing R with MPI/Fortran, MPI/Fortran alone, and R with the `Rmpi` package, which uses bindings to C. We will present results from simulation studies and real-world examples.

### References

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R Core Team, 2015. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. <https://www.R-project.org/>.