

## **The YUIMA Project: a Computational Framework for Simulation and Inference of Stochastic Differential Equations**

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The Yuima Project is an open source and collaborative effort aimed at developing the R package named “yuima” for simulation and inference of stochastic differential equations. In the yuima package, stochastic differential equations can be of very abstract type, multidimensional, driven by Wiener process or fractional Brownian motion with general Hurst parameter, with or without jumps specified as Lévy noise.

The yuima package is intended to offer the basic infrastructure on which complex models and inference procedures can be built on. The computational framework implemented allow for the estimation of high frequency data and also offer the ability to perform Monte Carlo analysis using cluster infrastructure whenever available in a transparent way to the user.

Some real examples of model implementation and data estimation will be considered.

**Key Words:** Stochastic differential equations, high frequency data, parallel Monte Carlo analysis, inference for stochastic processes