BIG DATA & ALGORITHMIC FINANCE

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Currently in my second year of PhD at the PRISM Sorbonne laboratory, I am working on the modeling of the joint asset price and volatility dynamics.
I published in Quantitative Finance the paper «The EWMA Heston Model».

DEEP ESTIMATION FOR VOLATILITY FORECASTING
Léo PARENT.

Rough path-dependent volatility (RPDV) models (Parent 2022) effectively capture key empirical features characteristic of volatility dynamics, making them a suitable choice for volatility forecasting. However, their complex structure presents challenges when it comes to estimating this type of model using standard approaches.

Taking this into consideration, the paper has a twofold objective: to develop an estimator function for a specific RPDV model using historical data and to make this RPDV model a competitive tool for volatility forecasting.

To achieve this objective, the article proposes an innovative estimation method in which the estimator function is formulated as a deep neural network (DNN) and is trained through interaction with a second DNN. After formalizing the estimation problem within the framework of Bayesian decision theory, the article details the methodology for constructing the estimator function. Finally, a comprehensive evaluation of the obtained estimator is conducted using both synthetic and market data to assess its performance.

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