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Section:

12. Probability and Statistics

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Lyons, T. J., Imperial College of Science, London, Great Britain
Branching particle approximations to smoothing and filtering

Nonlinear filtering in high dimensions has always proved to be computationally difficult. Recent work on the use of particle approximations that branch and die have transformed the computational problems and increased the tractability. The initial ideas followed Dawson Watanabe measure valued process paradigm, but the most effective algorithms now use minimal variance branching.

References.

(With D. Crisan) Nonlinear Filtering and Measure Valued Processes Probab. Theory and Relat. Fields 109, (1997), 217-244.
(with D. Crisan and J. Gaines) Convergence of a Branching Particle Method to the Zakai Equation. To appear, SIAM Journal of Applied. Maths.
(with D. Crisan) A Particle Approximation of the Solution of the Kushner-Stratonovich Equation. . Submitted to Prob. Theory and Relat. Fields. (1997), 1-18.