

Experience with Tree-Sparse Algorithms in Dynamic Stochastic Optimization

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Abstract: The lecture presents a robust and efficient algorithmic approach for the solution of stochastic dynamic optimization problems. The overall concept rests upon a suitable nesting of generic and problem-specific algorithms addressing various problem aspects. The algorithmic core employs a consequent classification and exploitation of the characteristic sparse structure in a large class of nonlinear programs with an underlying tree topology, such as stochastic programs in scenario tree formulation. A software tool for the automatic generation of problem-specific core solvers will be presented, and applications to financial mathematics and chemical engineering will be discussed.

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