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Automatic Differentiation of Algorithms: Theory, Implementation, and Application (Siam Proceedings Series) by Andreas Griewank and George F. Corliss | Jan 1, 1992. 5.0 out of 5 stars 1. Paperback More Buying Choices \$17.72 (7 used offers)

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Forward-mode automatic differentiation. The effect is remarkably simple: we just need to initialize $dx = 1$ and $dy = 0$ as the seed values for the algorithm. Hence, by choosing the seeds $dx = 1$ and $dy = 0$, the variable dz will contain the value of the derivative upon completion of the program. Similarly, if we want ,...

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Alphabetical List of tools. The Sacado package provides automatic differentiation tools for C++ applications and is part of the larger Trilinos framework. It provides both forward and reverse modes, and leverages expression templates in the forward mode and a simplified tape data structure in the reverse mode for improved efficiency.

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Automatic Differentiation of Algorithms | SpringerLink

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this is the updated version of the paper published in ACM TOMS, vol. 22(2) June 1996, pp. 131-167, Algor. 755 T. Coleman and G. Jonsson, The Efficient Computation of Structured Gradients using Automatic Differentiation, Technical Report CTC97TR272, Cornell 1997.

Automatic differentiation of algorithms, Journal of ...

Automatic differentiation of prototypical numerical integration algorithms Experimental results with a one-mass oscillator Application to a technical system Conclusions Automatic differentiation of numerical integration algorithms after Peter Eberhard, Christian Bischof Zo?a M?czy?ska 21. August 2006 Zo?a M?czy?ska Numerical integration algorithms

Reverse-mode automatic differentiation: a tutorial ...

Automatic differentiation of algorithms Bartholomew-Biggs, Michael; Brown, Steven; Christianson, Bruce; Dixon, Laurence 2000-12-01 00:00:00 We introduce the basic notions of automatic differentiation, describe some extensions which are of interest in the context of nonlinear optimization and give some illustrative examples.

Automatic differentiation of algorithms - ScienceDirect

In mathematics and computer algebra, automatic differentiation (AD), also called algorithmic differentiation or computational differentiation, is a set of techniques to numerically evaluate the derivative of a function specified by a computer program. AD exploits the fact that every computer program, no matter how complicated, executes a sequence of elementary arithmetic operations (addition, subtraction, multiplication, division, etc.) and elementary functions (exp, log, sin, cos, etc.).

Automatic differentiation - Wikipedia

Automatic Differentiation (AD) is a maturing computational technology and has become a mainstream tool used by practicing scientists and computer engineers. The rapid advance of hardware computing power and AD tools has enabled practitioners to quickly generate derivative-enhanced versions of their code for a broad range of applications in applied research and development.

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