

1112-65-459

Lluís Antoni Jimenez Rugama* (ljimene1@hawk.iit.edu), 10 W 32st, E1 - Room 120,
Chicago, IL 60616. *Efficient resource allocation based on error and cost analysis: Guaranteed
Automatic Integration Library.*

Computing power has been growing exponentially over the past decades. However, such powerful tools require more advanced mathematical techniques for a better resource allocation. Some questions such as "How much of these resources are needed?" or "Will it make an improvement taking more resources?" can be answered with a rigorous error and cost analysis of the numerical problem. Thus, this talk presents the GAIL MATLAB Toolbox (http://gailgithub.github.io/GAIL_Dev/, free software), a set of Adaptive Guaranteed Automatic algorithms for function integration and approximation. In particular, some details about the quasi-Monte Carlo algorithms will be provided, which are high-dimensional numerical integration methods with applications in finance, particle physics, or imaging. (Received August 10, 2015)