

# FROM THEORY TO PRACTICE, AND BACK: AVERAGE INSTANCE OPTIMALITY RATIO

BARBAY JEREMY

A selection of algorithms (e.g. to compute Maxima Sets and Convex Hulls) and data structures (e.g. to support rank and select queries on multisets, or to support domination and convex hull membership queries on planar points) achieve a theoretical performance within a constant factor of the optimal (e.g. instance optimality, and constant competitive ratio) based on the computation of the median of  $n$  values in time within  $O(n)$ . In practice though, a simple "median of three" or "median of five".