Department of Biomathematics Seminar Series:
Frontiers in Systems and Integrative Biology

BIOMATH

Proximal Distance Algorithms

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ABSTRACT:
The proximal distance principle is a new device for solving constrained optimization problems. The principle combines Clarke's exact penalty method with distance majorization to create versatile algorithms effective even in discrete optimization. Proximal distance algorithms are highly modular and reduce to set projections and proximal mappings, both very well-understood techniques in optimization. Neither the objective function nor the constraint set need be convex. Initial results on linear programming, binary piecewise-linear programming, L0 regression, matrix completion, and inverse sparse covariance matrix estimation are very promising. Proximal distance algorithms are poised to play a major role in the high-dimensional optimization problems encountered in data mining, computational statistics, and bioinformatics.

Host: Janet Sinsheimer, Ph.D.
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