Projection Methods: a survey

Feasibility problems, i.e., finding a solution
satisfying certain constraints, are common
in mathematics and the natural sciences.
If the constraints have simple projectors
(nearest point mappings), then one approach
is to use these projectors in some algorithmic
fashion to approximate a solution.

In this talk, I will survey three methods
(alternating projections, Dykstra, and Douglas-Rachford),
and comment on recent advances and remaining challenges.

An invitation to monotone operators:

The notion of a monotone operator is simple and
beautiful, unifying gradients of convex functions
and matrices with a positive semidefinite symmetric part.

In this talk, I will survey some of the basic theory
on monotone operators and show how they are useful
in the study of algorithms (including projection methods).

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