

A deterministic method for solving optimization problems: alternating projection.

Alternating projection is an iterative deterministic method for finding the intersection between (two) sets, which has found application to many different problems, including computation of channel capacity, computation of multidimensional equiripple filters, signal/image restoration and recovery, and antenna design. This course provides the basics of the method, describes its fundamental properties and examines the possible drawbacks. Examples are provided, which show the ability of alternating projection to effectively solve also non-linear and non-convex optimization problems.

Program: Prerequisites (Hilbert spaces, closed and convex sets, projectors and projections: definitions and properties). The method of successive projections (definition, properties, convergence, traps and tunnels). Application examples.