A Note on the Finite Convergence of Alternating Projections

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Relevance to the Centre

Most industry optimization problems are formulated as linear programming. Therefore, having a robust method for solving large-scale linear programming is crucial in practice. Projection methods are often used as robust methods for solving large-scale optimization problems and systems of equations. We show that a linear programming problem can indeed be solved by finding the closest points of two sets using alternating projections. Furthermore, using our new results, we can also determine the minimum distance (or lower bound), relative to the starting point of the algorithm, needed to ensure the convergence after just one iteration. This idea is valid not just for linear programming problems, but also some other optimization problems.

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