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Computational Approaches for Solving Systems of Nonlinear Equations

Finding one or more solutions to a system of nonlinear equations (SNE) is a computationally hard problem with many applications in sciences and engineering.

First, we will briefly discuss classical approaches for addressing SNE.

Then, we will discuss the various ways that a SNE can be transformed into an optimization problem, and we will introduce techniques that can be utilized to search for solutions to the global optimization problem that arises when the most common reformulation is performed.

In addition, we will present computational results using different heuristics.