

# **Symmetry and Combinatorial Optimization**

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A large variety of computational tasks - from the design of telecommunications networks to matching organ donors with recipients - involve the solution of combinatorial optimization problems. These provide a convenient mathematical formalism for phrasing the search for solutions in a large space of possibilities while optimizing an objective function. Such problems are ubiquitous in the sphere of big data. An introduction will be given to such problems and how the mathematical study of symmetry in data can lead to insights into the complexity of solving such problems will be shown.