

Structure in solution spaces: three lessons from Jean Claude

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Through my work with Jean-Claude Falmagne on learning spaces, I have learned that the underlying algebraic and geometric structures in the space of solutions to a combinatorial problem can be of great help in devising algorithms for the problem, and I have applied those lessons to other problems beyond learning spaces. I will describe three examples of structures and their applications: distributive lattices and rectangular cartograms, antimatroids and the $1/3$ - $2/3$ conjecture, and partial cubes and the flip distance among triangulations.