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Type-constrained de Finetti reductions

For many information processing tasks, de Finetti-style theorems can often simplify the analysis in worst-case input scenarios for which the task exhibits some permutation-invariance symmetry, as they can allow for a reduction from an analysis on worst-case inputs to that of i.i.d. inputs. If further information is available on the inputs, it might be advantageous to reflect this information in the de Finetti reduction.

In this presentation, we focus on a form of such constraint, based on the type of the input. This allows us to obtain a conceptually simple proof of a new de Finetti reduction for classical probability distributions, derived from elementary properties from the method of types.