

QUALITATIVE LEARNING THROUGH “FITNESS”

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In this talk will consider the problem of interpolating points in a plane by lattice polynomial functions. This lattice variant differs from the classical interpolation problem, where interpolating functions are polynomials over the field of real numbers, in many aspects. For instance, solutions to this lattice version do not always exist and when they do exist, they are usually not unique. Henceforth, we will provide necessary and sufficient conditions that guarantee the existence of interpolating lattice polynomial functions, and present a complete description of these solutions if they exist.

Our interest in this lattice version of the interpolation problem is motivated by fields pertaining to decision making and artificial intelligence. Indeed, an approach to preference learning is through fitting and, in the qualitative setting of multicriteria decision making, such a tool can be regarded as a form of interpolation. This observation reveals potential applications of our results in these fields that will be also discussed. Some of the results presented appear in joint collaborations with Tamás Waldhauser.

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