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**Sara Jamshidi\*** ([jamshidi@math.psu.edu](mailto:jamshidi@math.psu.edu)), The Pennsylvania State University, Department of Mathematics, 109 McAllister Bldg, State College, PA 16802-6401. *Object classification based on the representativeness heuristic.*

Automated object classification generally fails when the collection of sensed features are sufficiently distinct from the known collections within a given dictionary. We present an uncertainty model arising from a (locally distributive) lattice algebra generated from a given object poset whose order structure is based on generality, known as hyponymy in semantic field theory. Probabilistic decisions are based on principle filters and a weaker notion of complementation within the object poset. This method gives rise to a particular kind of formal concept analysis inspired by the representativeness heuristic. From the perspective of the user, this can allow for good approximations of classifications when the correct answer is absent in the dictionary.

In this talk we describe Multiresolution Matrix Factorization (MMF), which reinterprets Orthogonal Multiresolution Analysis as a matrix operation, and hence generalizes it to almost any finite space whose metric structure can be described by a symmetric matrix. We show that MMF can be successfully applied in a range of practical tasks from matrix compression to preconditioning large linear systems. The work presented in this talk is joint with Nedelina Teneva and Pramod K Mudrakarta. (Received August 18, 2015)