
The aim of label classification is to accurately and efficiently determine, or predict, a label for a piece of data using a computational learning system. For instance, cell phone users often label much of their data and a basic question is to learn how a user will label a new piece of data. We frame label classification in the context of coherent configurations for machine learning systems towards applicability in deep learning architectures.

Coherent configurations, also called coherent algebras, arise in various works in algebraic graph theory and provide a basis for a combinatorial imitation of permutation groups. Machine learning, as an area of computer science, attempts to learn a pattern or labelling system for given set of data, without having the rule for the data programmed ahead of time. Deep learning is a particular approach which uses neural networks to learn and classify.

Our label selection process is via transductive interference and this is framed in the context of Martin-Löf tests and randomness deficiencies in a set of labelled data instances. In transductive inference, training examples are allowed to be directly used to develop reasoning towards predicting labels of new examples. (Received February 05, 2019)