

D2.2 - AML Theorems II

AML has the advantage of mathematical transparency in the sense of having a mathematical structure that facilitates the derivation of theorems and also in the sense of being able to understand what is actually learned. We leverage this advantage to obtain a set of theorems demonstrating some fundamental properties of AML. In the previous deliverable D2.1., we gave a set of theorems showing the properties of an extension of finite semilattice to atomized semilattices by adding additional elements (atoms). In this deliverable we give theorems related to how to embed a problem into a semilattice. Before we state their theorems and their proofs, we discuss the embedding problem. We first give a definition for semantic embeddings into semilattices. We then introduce four different kinds of embeddings and show how to use atomized semilattices to characterize them. Finally, we give a set of relevant theorems and their proofs. Together, deliverables D2.1 and D2.2. give the set of mathematical theorems for finite atomized semilattices used in AML.