

Data without numbers: Computing with formal concepts.

Bernhard Ganter

Technische Universität Dresden, Germany

Abstract

Formal Concept Analysis is a mathematical theory that offers a formalisation of ‘concept’ and ‘conceptual hierarchy’. It provides a rich methodology based on the algebraic theory of complete lattices. Offering solid mathematical tools for the representation and analysis of also non-numerical data, it has a tradition of applications in many areas. In particular its data visualisations are highly intuitive even for those users who have not studied the theoretical background.

The author focuses on questions of knowledge exploration. A key issue of this talk is how to design a compact, correct and complete representation of certain, well limited areas of knowledge. For the simplest case of implicational attribute logic, a popular result guarantees the existence of a minimal base of information. This result can, with some loss of elegance, be widely generalised to structurally fit a multitude of applications. Examples will be indicated. However, some fundamental theoretical problems (such as complexity issues) remain unsolved.

CV

Bernhard Ganter is the head of the Algebra Institute at Dresden University, Germany, where he holds a personal chair for “Algebraic Structure Theory” since 1993. He received his academic degrees at Darmstadt University, with research interest first in Combinatorics, General Algebra, and Order Theory. He is a co-author (with his former supervisor Rudolf Wille) and co-editor of several books, mainly on *Formal Concept Analysis*, his main field of interest today.