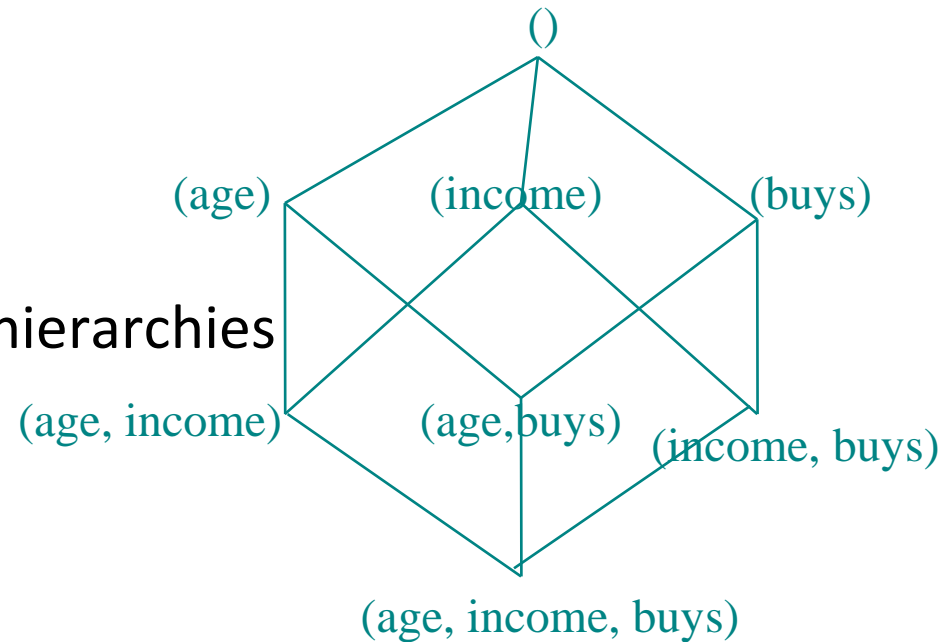
The background features a complex, abstract design. It includes a network of red lines connecting green dots, resembling a graph or a spatial network. There are also faint, repeating patterns of small symbols (like arrows and plus signs) in the upper left and lower left corners. A large, light gray, angular shape is positioned behind the title text. The overall color palette is muted, with earthy tones and soft pastels.

Mining Quantitative Associations

Mining Quantitative Associations

- ❑ Mining associations with numerical attributes
 - ❑ Ex.: Numerical attributes: **age** and **salary**
- ❑ Methods
 - ❑ Static discretization based on predefined concept hierarchies
 - ❑ Data cube-based aggregation
 - ❑ Dynamic discretization based on data distribution
 - ❑ Clustering: Distance-based association
 - ❑ First one-dimensional clustering, then association
 - ❑ Deviation analysis:
 - ❑ Gender = female \Rightarrow Wage: mean=\$7/hr (overall mean = \$9)



Mining Extraordinary Phenomena in Quantitative Association Mining

- ❑ Mining extraordinary (i.e., interesting) phenomena
 - ❑ Ex.: Gender = female \Rightarrow Wage: mean=\$7/hr (overall mean = \$9)
 - ❑ LHS: a subset of the population
 - ❑ RHS: an extraordinary behavior of this subset
- ❑ The rule is accepted only if a statistical test (e.g., Z-test) confirms the inference with high confidence
- ❑ Subrule: Highlights the extraordinary behavior of a subset of the population of the super rule
 - ❑ Ex.: (Gender = female) \wedge (South = yes) \Rightarrow mean wage = \$6.3/hr
- ❑ Rule condition can be categorical or numerical (quantitative rules)
 - ❑ Ex.: Education in [14-18] (yrs) \Rightarrow mean wage = \$11.64/hr
- ❑ Efficient methods have been developed for mining such extraordinary rules (e.g., Aumann and Lindell@KDD'99)