RAMA UNIVERSITY

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FACULTY OF EGINEERING

DATA MINING & WAREHOUSEING LECTURE-35

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OUTLINE

- EXAMPLE: ANALYTICAL CHARACTERIZATION
- EXAMPLE: ANALYTICAL CHARACTERIZATION
- EXAMPLE2: ANALYTICAL CHARACTERIZATION
- MINING CLASS COMPARISONS
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- MCQ
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Example: Analytical Characterization

Calculate Calculate expected expected info required required to classify classify a given

sample if S is partitioned according to the attribute

$$E(major) = \frac{126}{250} I(s_{11}, s_{21}) + \frac{82}{250} I(s_{12}, s_{22}) + \frac{42}{250} I(s_{13}, s_{23}) = 0.7873$$

$$Gain(major) = I(s_1, s_2) - E(major) = 0.2115$$

- Calculate information gain for each attribute

Gain(major) □ I(s ,s 21)□ E(major) □ .21150

Gain(gender) = 0.0003

– Information gain for all attributes

Gain(gender) 0.0003

Gain(birth_country) = 0.0407

Gain(major) = 0.2115

Gain(gpa) = 0.4490

Gain(age_range) = 0.5971

Example: Analytical characterization

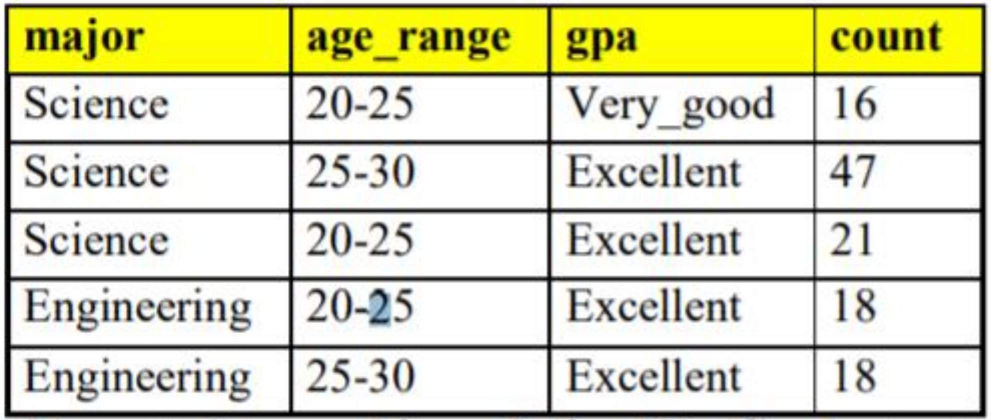
4. Initial working relation (W0 g) derivation

– R = 0.1

– remove irrelevant/weakly relevant attributes from candidate relation

=> drop gender, birth_ y country

– remove contrasting class candidate relation



major	age_range	gpa	count
Science	20-25	Very_good	16
Science	25-30	Excellent	47
Science	20-25	Excellent	21
Engineering	20-25	Excellent	18
Engineering	25-30	Excellent	18

Initial target class working relation W_0: Graduate students

5. Perform attribute-oriented induction on W0 using Ti

Example2: Analytical Characterization

Data collection

– target class: graduate student class: graduate student

– contrasting class: undergraduate student

• 2. Analytical generalization using Ui y g

– attribute removal

• remove name and phone#

– attribute generalization

• generalize major, birth_place, birth_date and gpa

• accumulate counts

– candidate relation: gender, major, birth_country,

age_range and gpa

Mining Class Comparisons

Comparison

– Comparing two Comparing two or more classes. classes.

• Method

– Partition the set of relevant data into the target class and the

contrasting classes

– Generalize both classes to the same high level concepts

– Compare tuples with the same high level descriptions

Mining Class Comparisons

Present for every p p tu le its description and two measures:

- support - distribution within single class

- comparison - distribution between classes

– Highlight the tuples with strong discriminant features

- Relevance Analysis

– Find attributes (features) which best distinguish different

classes.

Multiple Choice Question

1. Various visualization techniques are used in ____________ step of KDD.

a) selection
b) transformaion
c) data mining.
d) interpretation.

2. Extreme values that occur infrequently are called as __________.

a) outliers
b) rare values.
c) dimensionality reduction.
d) All of the above.

3. Box plot and scatter diagram techniques are _______.

a) Graphical
b) Geometric
c) Icon-based.
d) Pixel-based.

4. ___________ is used to proceed from very specific knowledge to more general information.

a) Induction
b) Compression.
c) Approximation.
d) Substitution.

5. Describing some characteristics of a set of data by a general model is viewed as _____________

a) Induction
b) Compression
c) Approximation
d) Summarization

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