Chapter 4

Types of Data Manipulations

Study Exercise – Learning the most famous data transformation methods

The most famous data transformations are listed in the following: Normalization, Standardization, Log Transformation, Feature Extraction, Attribute Construction, Binary coding, Ranking Transformation, Discretization, Smoothing, Aggregation, and Binning.

For each of the listed Data Transformation methods, answer the following questions.

1. What does the method do to the values of the data?
2. What is the objective of the method?
3. Does the method also involve changing the structure of the data (Data Wrangling)? Explain.
4. Describe a situation that the method would be useful.
5. Does the method have names that are used commonly?

Once you’ve answered the preceding quesitons about each mentioned method, then answer the following quesitons.

* Q1: What’s the difference between Normalization and Standardization? Describe two different situations that one would be preferable to the other.
* Q2: What are the differences and similarities between Attribute Construction and Feature Extraction?
* Q3: Binary Coding, and Ranking Transformation have something in common that is in contrast with Discretization, what is that?
* Q4: What is the relationship between Smoothing and Aggregation?
* Q5: what is the relationship between Binning and Discretization?

Answers to method-specific questions

Normalization

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| **What does the method do to the values of the data?**  The answer … |
| **What is the objective of the method?**  The answer … |
| **Does the method also involve changing the structure of the data (Data Wrangling)? Explain.**  The answer … |
| **Describe a situation that the method would be useful.**  The answer … |
| **Does the method have names that are used commonly?**  The answer … |

Standardization

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| **What does the method do to the values of the data?**  The answer … |
| **What is the objective of the method?**  The answer … |
| **Does the method also involve changing the structure of the data (Data Wrangling)? Explain.**  The answer … |
| **Describe a situation that the method would be useful.**  The answer … |
| **Does the method have names that are used commonly?**  The answer … |

Log Transformation

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| **What does the method do to the values of the data?**  The answer … |
| **What is the objective of the method?**  The answer … |
| **Does the method also involve changing the structure of the data (Data Wrangling)? Explain.**  The answer … |
| **Describe a situation that the method would be useful.**  The answer … |
| **Does the method have names that are used commonly?**  The answer … |

Feature Extraction

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| **What does the method do to the values of the data?**  The answer … |
| **What is the objective of the method?**  The answer … |
| **Does the method also involve changing the structure of the data (Data Wrangling)? Explain.**  The answer … |
| **Describe a situation that the method would be useful.**  The answer … |
| **Does the method have names that are used commonly?**  The answer … |

Attribute Construction

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| **What does the method do to the values of the data?**  The answer … |
| **What is the objective of the method?**  The answer … |
| **Does the method also involve changing the structure of the data (Data Wrangling)? Explain.**  The answer … |
| **Describe a situation that the method would be useful.**  The answer … |
| **Does the method have names that are used commonly?**  The answer … |

Binary coding

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| **What does the method do to the values of the data?**  The answer … |
| **What is the objective of the method?**  The answer … |
| **Does the method also involve changing the structure of the data (Data Wrangling)? Explain.**  The answer … |
| **Describe a situation that the method would be useful.**  The answer … |
| **Does the method have names that are used commonly?**  The answer … |

Ranking Transformation

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| **What does the method do to the values of the data?**  The answer … |
| **What is the objective of the method?**  The answer … |
| **Does the method also involve changing the structure of the data (Data Wrangling)? Explain.**  The answer … |
| **Describe a situation that the method would be useful.**  The answer … |
| **Does the method have names that are used commonly?**  The answer … |

Discretization

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| **What does the method do to the values of the data?**  The answer … |
| **What is the objective of the method?**  The answer … |
| **Does the method also involve changing the structure of the data (Data Wrangling)? Explain.**  The answer … |
| **Describe a situation that the method would be useful.**  The answer … |
| **Does the method have names that are used commonly?**  The answer … |

Smoothing

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| **What does the method do to the values of the data?**  The answer … |
| **What is the objective of the method?**  The answer … |
| **Does the method also involve changing the structure of the data (Data Wrangling)? Explain.**  The answer … |
| **Describe a situation that the method would be useful.**  The answer … |
| **Does the method have names that are used commonly?**  The answer … |

Aggregation

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| **What does the method do to the values of the data?**  The answer … |
| **What is the objective of the method?**  The answer … |
| **Does the method also involve changing the structure of the data (Data Wrangling)? Explain.**  The answer … |
| **Describe a situation that the method would be useful.**  The answer … |
| **Does the method have names that are used commonly?**  The answer … |

Binning

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| **What does the method do to the values of the data?**  The answer … |
| **What is the objective of the method?**  The answer … |
| **Does the method also involve changing the structure of the data (Data Wrangling)? Explain.**  The answer … |
| **Describe a situation that the method would be useful.**  The answer … |
| **Does the method have names that are used commonly?**  The answer … |

Answers to general questions

Q1: What’s the difference between Normalization and Standardization? Describe two different situations that one would be preferable to the other.

The answer …

Q2: What are the differences and similarities between Attribute Construction and Feature Extraction?

The answer…

Q3: Binary Coding, and Ranking Transformation have something in common that is in contrast with Discretization, what is that?

The answer….

Q4: What is the relationship between Smoothing and Aggregation?

The answer…

Q5: what is the relationship between Binning and Discretization?

The answer….