Chapter 1 Statistics and Data Science
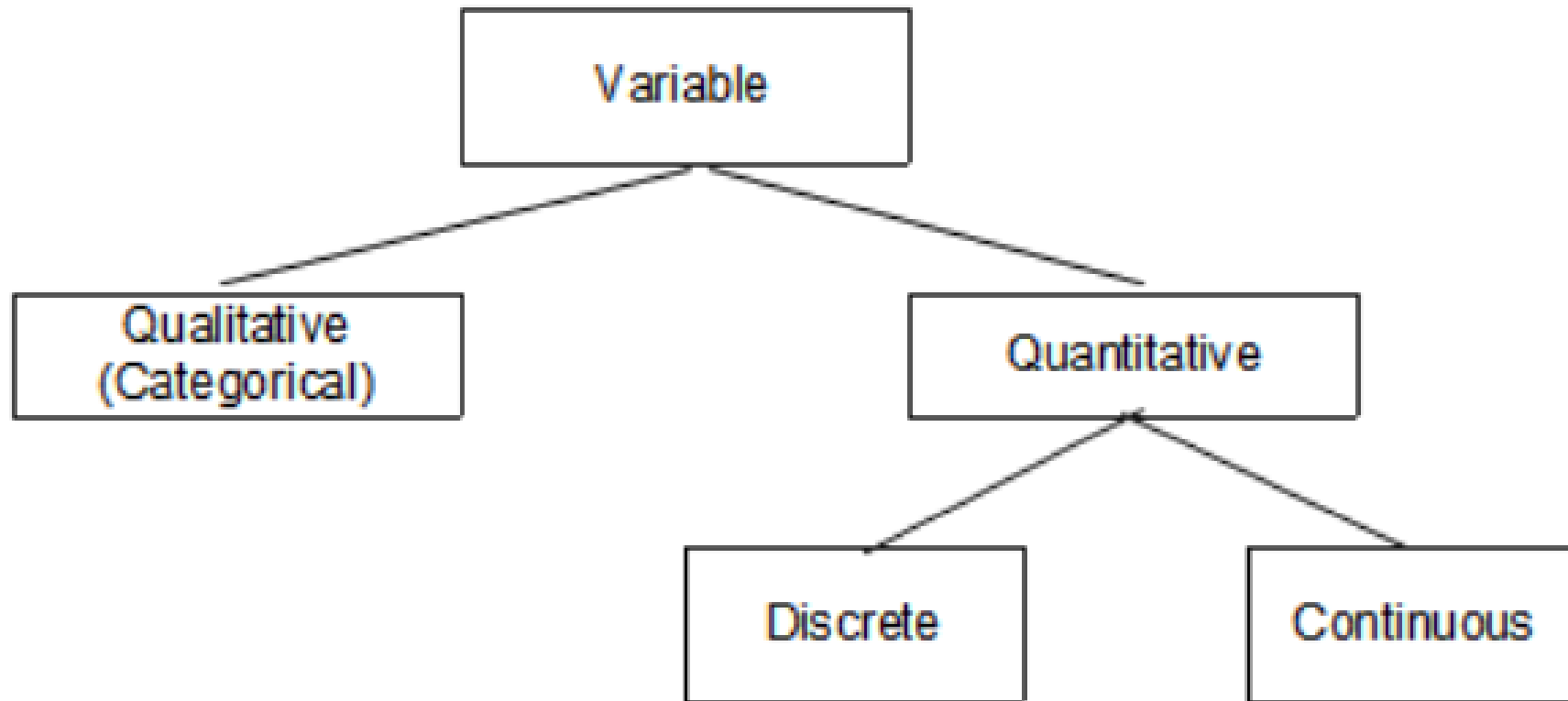
1.3 Variables and Data

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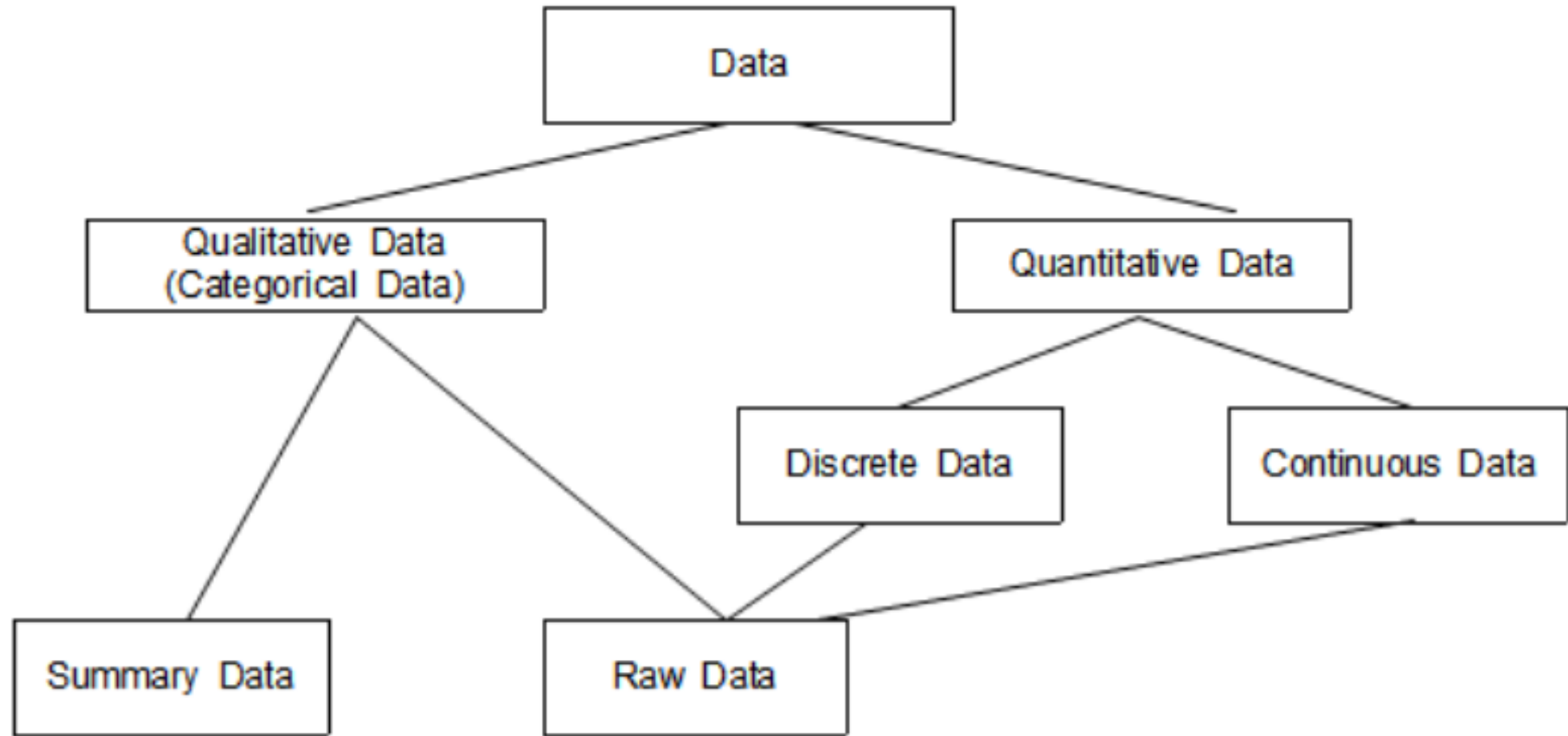**Visiting Professor of ADA University, Azerbaijan**

1.3 Variables and Data

- **Data** are values that observe or measure the properties of an object or event that are of interest by a given rule.
- The property of these objects or events is called a **variable**.
  - if you measured the gender and height of a college student, there are two variables (gender and height).

- **Qualitative variable**: Attributes of gender are 'Male', 'Female',…
  (Categorical variable)
  => frequency analysis
- **Quantitative variable**: Height are 180cm, 165cm, 175cm, …
  => Discrete(countable) vs Continuous(uncountable) variable
  => statistical analysis

<Figure 1.3.1> Types of variables

<Figure 1.3.2> Types of data

- Categorical data are classified either raw data or summary data

  – Raw Data of Gender   – Summary (Frequency Table) Data of Gender

row	Gender
1	Male
2	Female
3	Male
4	Female
5	Male
6	Male
7	Male
8	Female
9	Female
10	Male

Gender	Students
Male	6
Female	4

- 'Gender' variable name
- , 'Male' or 'Female' variable value

Thank you