DSCI351-351m-451: Class 10a Study Protocol of Hardcoat Acrylic

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10.1.2.1 The Study Protocol and Structure of the Data for Hardcoat Acyrlics

- In LE3-6, LE4-5 and LE5-6 students were asked to perform Exploratory Data Analysis

  - on a "real" set of data
    * From a study of hardcoat acrylics
  - from a real world study
    * with its own questions, data taken and datafiles

The assignment was designed to

- lead you through a proper data analysis
  - as if you were approaching the problem as a data scientist.

Often times, data scientists will be given data

- that they have little to no understanding of.

Therefore, it is not always the responsibility of the data scientist

- to completely understand the MEANING of the data that they work with,
- but rather to understand the STRUCTURE and DATA TYPES
  - they are working with
  - and what TECHNIQUES are appropriate for each DATA TYPE.

10.1.2.1.1 Structure of a Study: The Study Protocol   The goal of this assignment was for students

- to design and structure
  - their own data science analysis.
- And assemble the supplied data into a Tidy dataframe
  - And do some EDA on their dataset

This process involved understanding:

- The Study Protocol: Parametric Variations of Observations
  - The variables you are studying
  - Predictors

- Data Manipulation
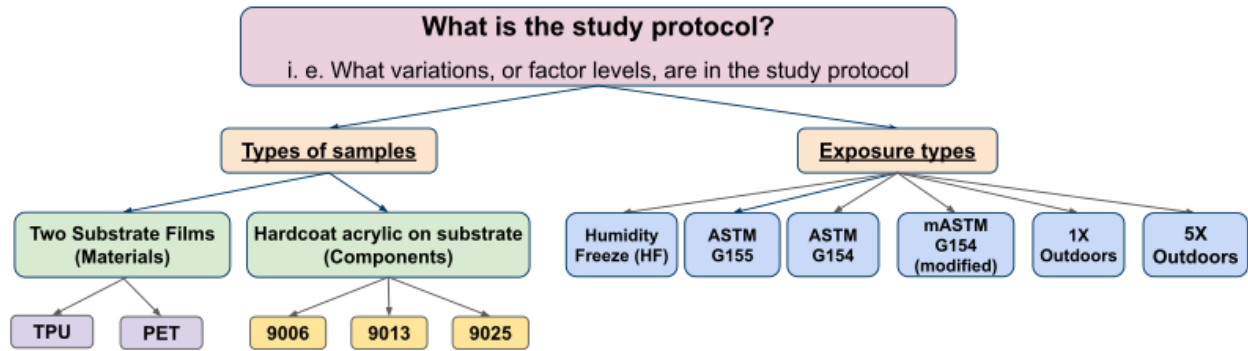 - Arranging the Data for a "tidy" analysis

Figure 1: Study Protocol

- Dimensionality of the Data
    - Point Values are 0D
        * Point values through time are 0.5D
    - Spectra, or X vs. Y data are 1D
        * And if they change through time they are 1.5D
    - Images or Photos are 2D
        * Movies are Images through time so they are 2.5D
    - Volumetric Data is 3D
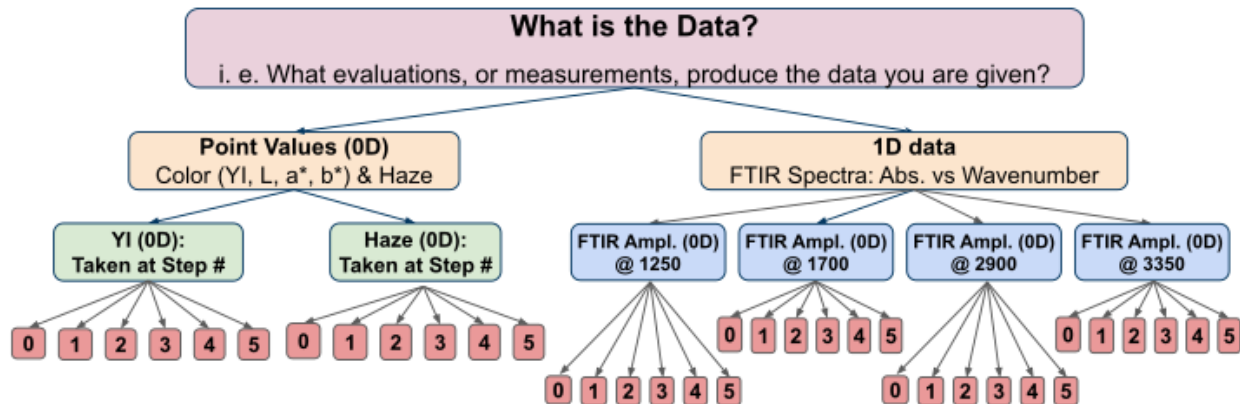   * Volumetric Data through time is 3.5D

Figure 2: Study Protocol

- Levels of Data
    - Categories of Samples

10.1.3 Links