

Train / Validation / Test Split - 101

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Training Data



The diagram illustrates a data split into three categories: Training Data, Validation Data, and Test Data. It consists of three adjacent rectangular blocks. The first block is blue and labeled 'Training Data'. The second block is green and labeled 'Validation Data'. The third block is red and labeled 'Test Data'. A blue bracket is positioned below the blue and green blocks, pointing down to a text box.

Training Data

Validation Data

Test Data

- Data sample used to fit the model

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Validation Data



- Data sample used to evaluate the model
- Used to fine-tune model hyperparameters
- Model occasionally „sees“ the data, but does not learn from it
- Affects the model indirectly

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Test Data



- Data sample used to provide an unbiased evaluation of final model
- Provides gold-standard
- Model “sees” data only once
- used to evaluate competing models
- Same distribution as validation data
- Often only training and validation data is used, and no test data.

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Split Ratio

- Depends on two things: total number of samples, actual model
- Some models require more training data
- Validation data big enough to detect differences between models
- Models with few hyperparameters will be easy to validate → smaller validation dataset
- Models with many hyperparameters will be harder to validate → larger validation dataset

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Interactive

Live Shiny-app!

Train / Test / Validation Split

Data Count

Train Ratio:

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1

0.8

Test / Holdout Ratio:

0 0.02 0.04 0.06 0.08 0.1 0.12 0.14 0.16 0.18 0.2

0.1

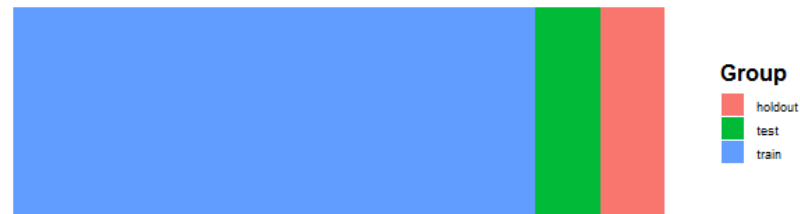
Seed

Selection Type

☒ Linear

☐ Random

Train / Test / Holdout Split



0 250 500 750 1000

| Type | Ratio [%] | Data Count [-] |
|---------|-----------|----------------|
| train | 80.00 | 800.00 |
| test | 10.00 | 100.00 |
| holdout | 10.00 | 100.00 |