



**CrossValidationPanelData**

- Autocorrelation issues: assumption of i.i.d. observations won't hold over time
- The CV methods presented will ignore the sequential nature of time

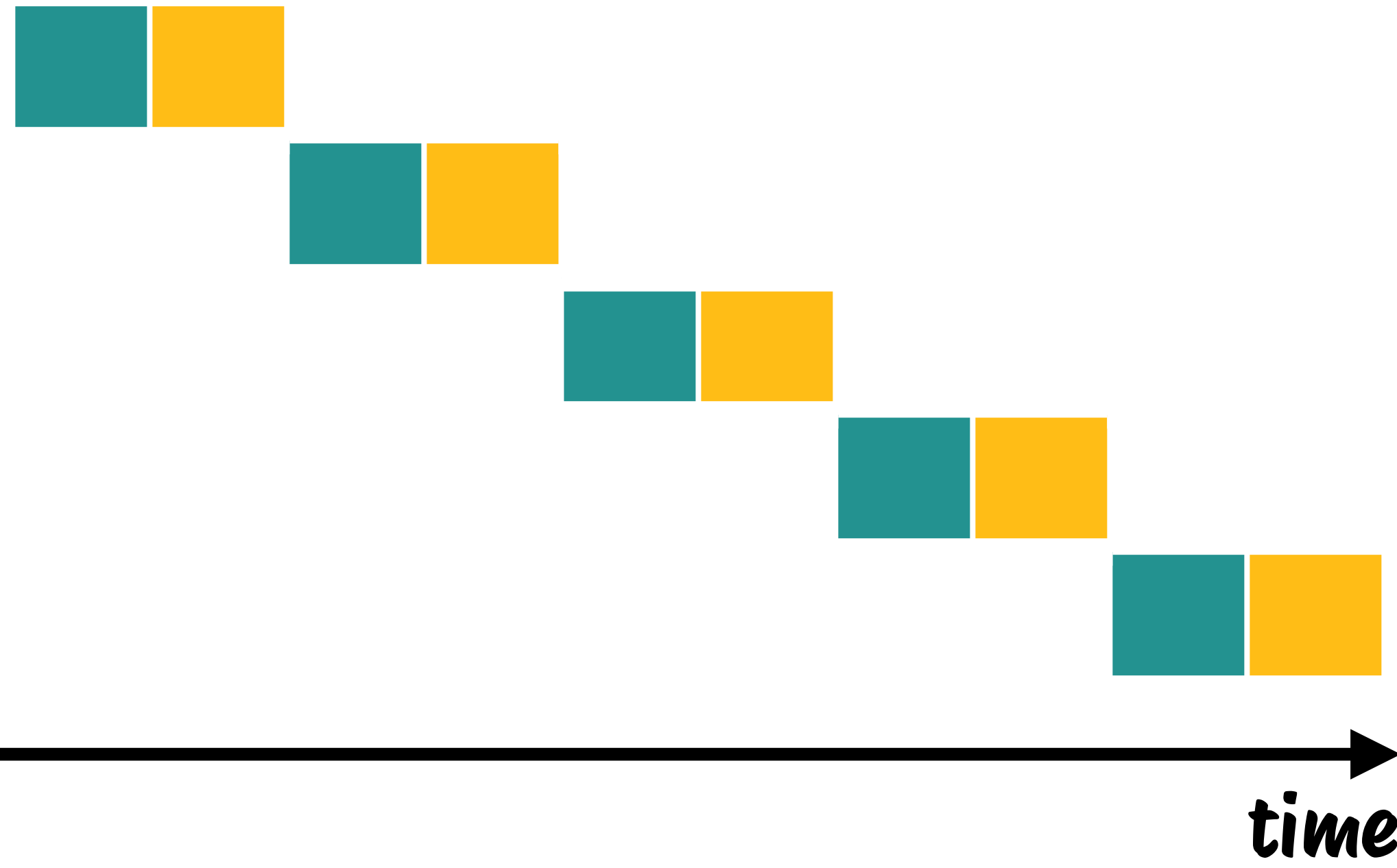


# Nested Cross Validation

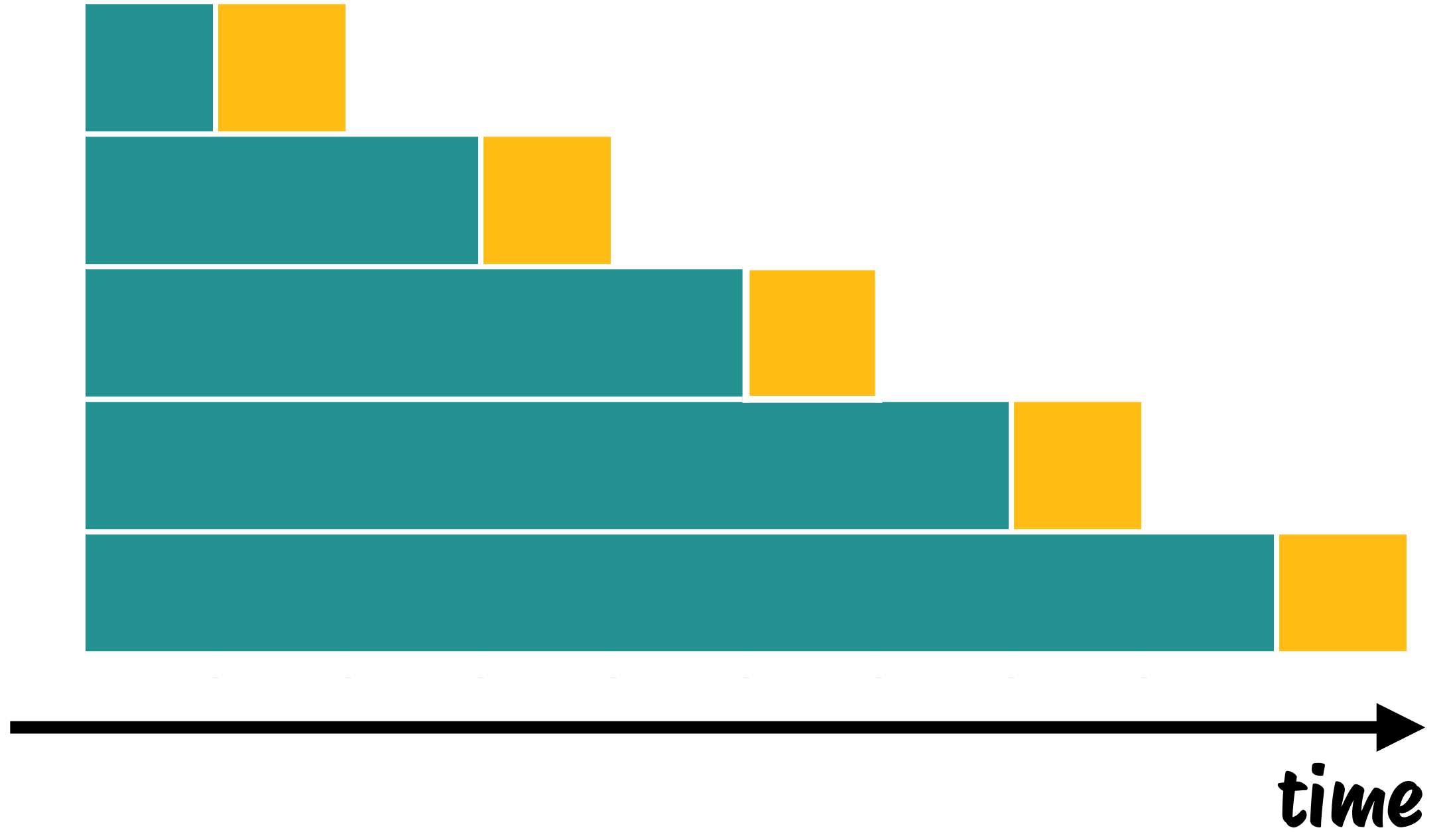
 **train**  
 **test**

**data**

***sliding time window***



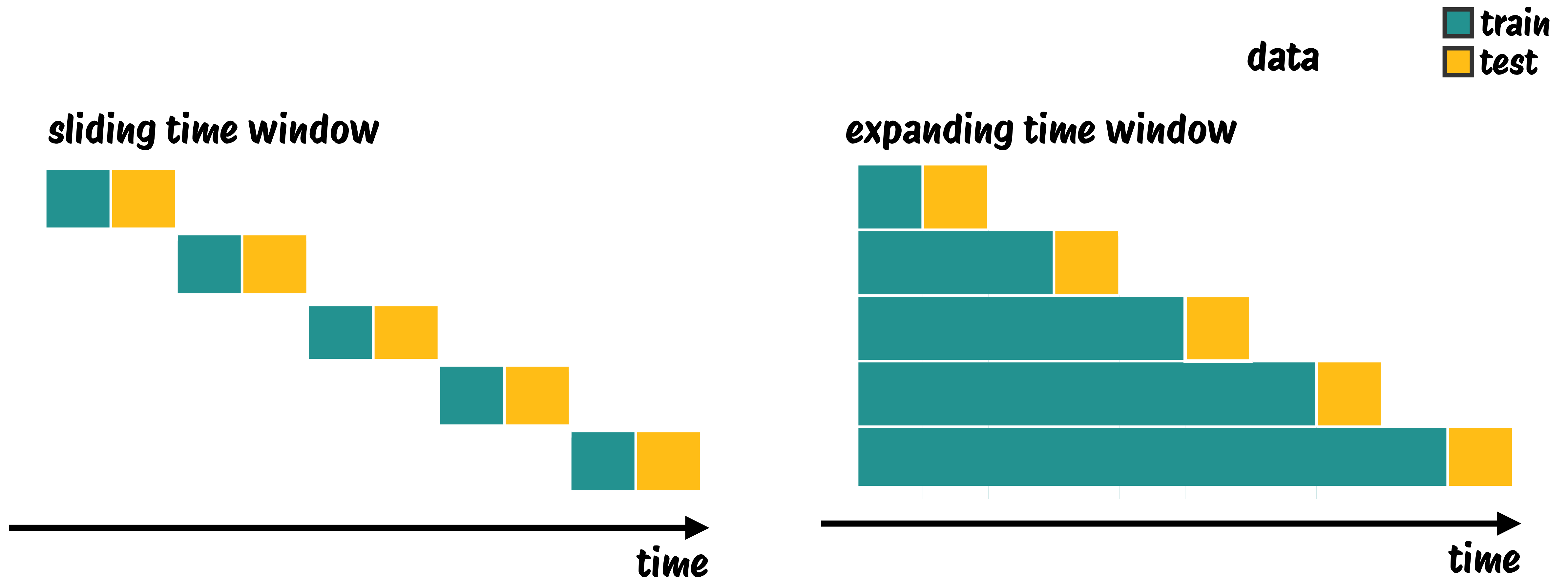
***expanding time window***



# Cross Validation and Panel Data

- Autocorrelation issues: assumption of i.i.d. observations won't hold over time
- The CV methods presented will ignore the sequential nature of time

⇒ **Nested Cross Validation**



# Today's Example I: Iris Data

- Data: 50 flowers in 3 different species and 4 different attributes
- Use some useful packages such as `caret` (Classification And Regression Training)
- Apply linear model and use following performance metrics:  $R^2$ ,  $RMSE$ ,  $MAE$
- Validation approaches:
  - Validation set approach
  - LOOCV
  - K-fold CV
  - Repeated K-fold CV

