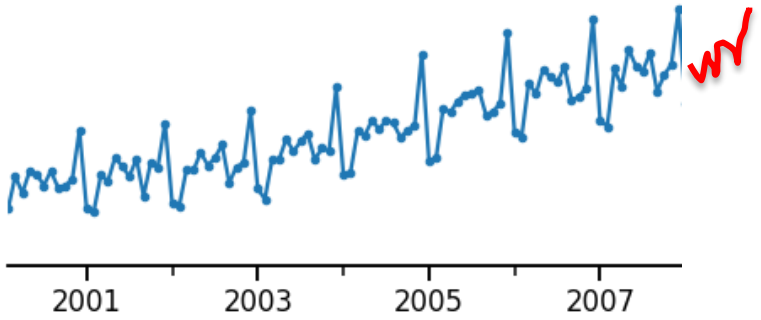
Forecasting models

Machine Learning Algorithms

Time Series Forecasting

Time	Sales
30/03/20	200
31/03/20	220
01/04/20	230
02/04/20	235
03/04/20	?
04/04/20	?



- We don't have predictors
- We need to use past data

Time Series Forecasting

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Simple models:

- Predict the last value
- Predict the mean of the last x values (moving average)

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Special models:

- **Exponential Smoothing**: weighted average of last values
- **ARIMA - Autoregression**: forecast with a linear combination of past values of the target.
- **Prophet**
- **Neuronal networks** - RNN

- These models can take the "raw" time series as input.
- Neural Networks can also take additional features.

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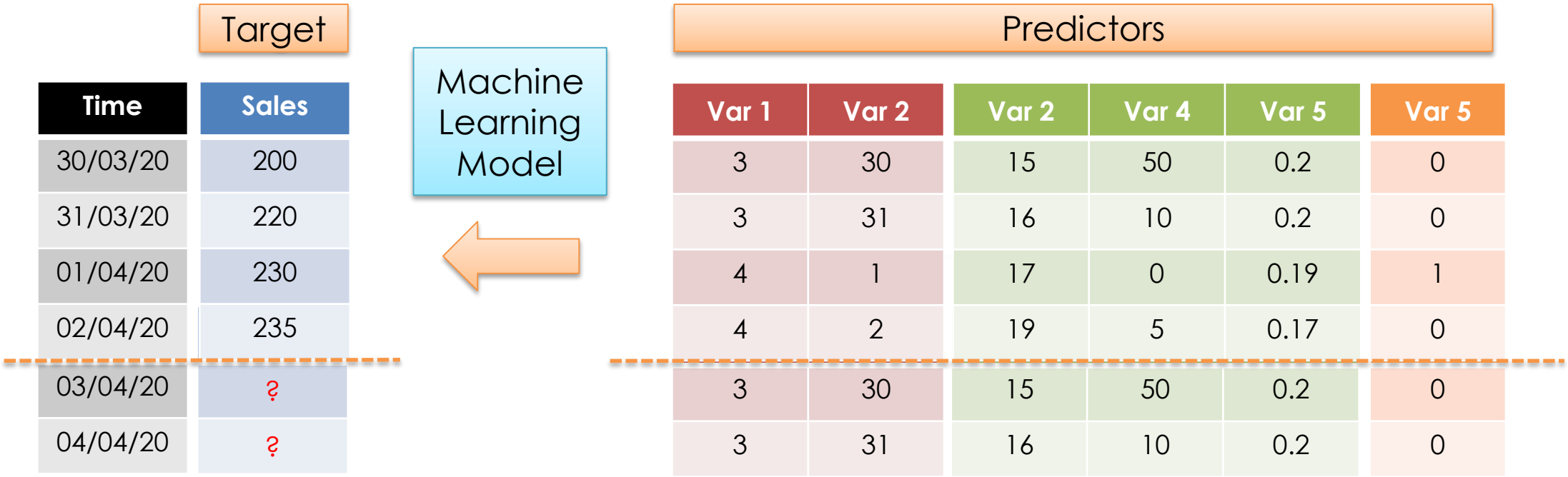
Off-the-shelf machine learning models

- Linear regression
- Random Forests
- Gradient Boosting Machines (xgb, lightGBMs)
- SVM, KNN, etc
- **We need predictors!**

- These models predict a target based of predictors.
- We need predictor variables.
- We need a suitable target.

Extract features



- How do we generate the predictors and the target?

✓ This is the main topic of the course.

Summary

Simple models predict future values based of past values.

Special models that can take the raw time series, like ES, ARIMA and Prophet.

We can forecast with traditional machine learning models plus feature engineering.