



Machine Learning

Data Preparation of Sensor Data

Project Wheels

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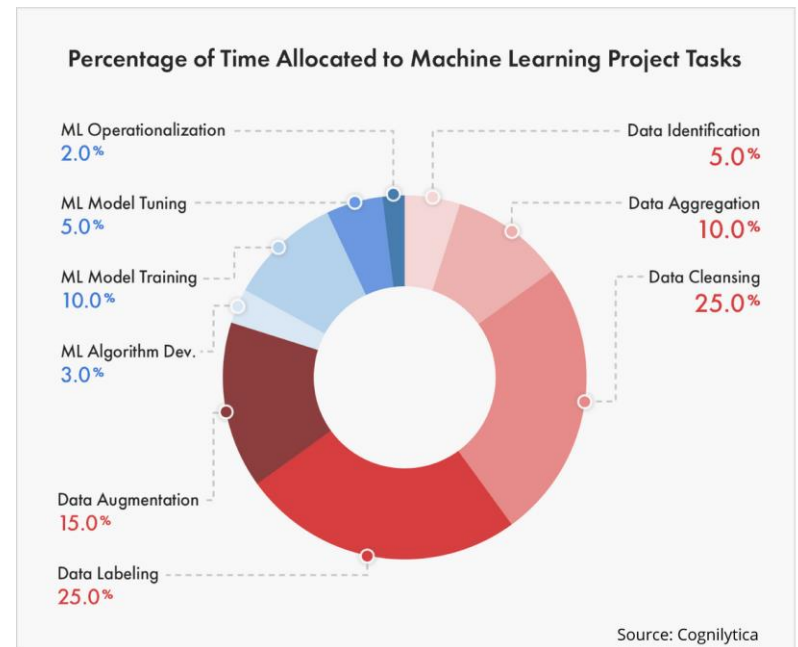
- Why prepare data?
- Data Cleansing
- Data Augmentation
- Jupyter Challenge



Machine Learning

Why prepare data?

- Most important step in Machine Learning
- Must be done before model training
- Big impact on accuracy/recall/precision



Machine Learning

Data Cleaning

	Acceleration	Temperature	Fuel	Action
1	3.52	20	4.31	Acceleration
2	3.52	21	4.21	Acceleration
3	1.34	20	4.18	Acceleration
4	0.00	21	NaN	Steady
5	-0.34	20	4.16	Deceleration



Machine Learning

Data Cleaning

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Machine Learning

Data Labeling

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Machine Learning

Data Labeling

	Acceleration	Temperature	Fuel	Action
1	3.52	20	4.31	2
2	3.52	21	4.21	2
3	1.34	20	4.18	2
4	0.00	21	0	1
5	-0.34	20	4.16	0



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Balancing

	Acceleration	Temperature	Fuel	Action
1	3.52	20	4.31	2
2	3.52	21	4.21	2
3	1.34	20	4.18	2
4	0.00	21	0	1
5	0.00	21	0	1
6	0.00	21	0	1
7	-0.34	20	4.16	0
8	-0.34	20	4.16	0
9	-0.34	20	4.16	0



Machine Learning

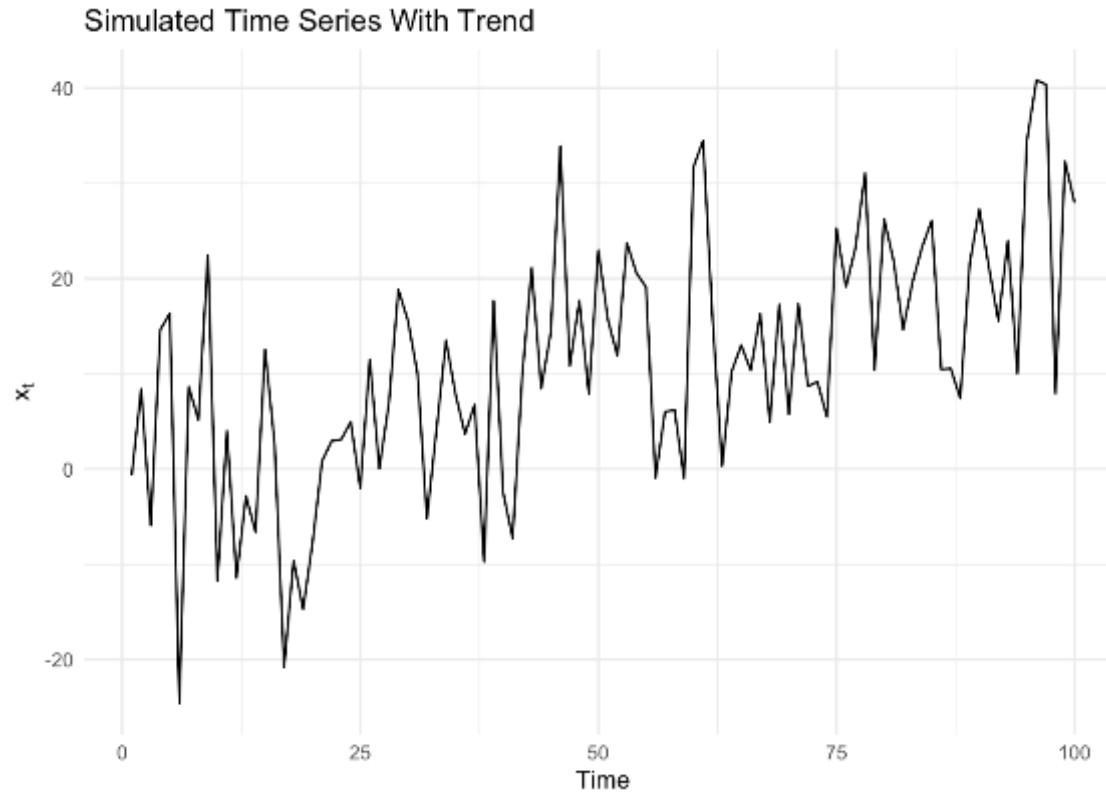
Data Augmentation

- Balancing
- Low-Pass filter
- Multiplying
- Dividing
- Polynomials
- Differentials



Machine Learning

Low-Pass filter



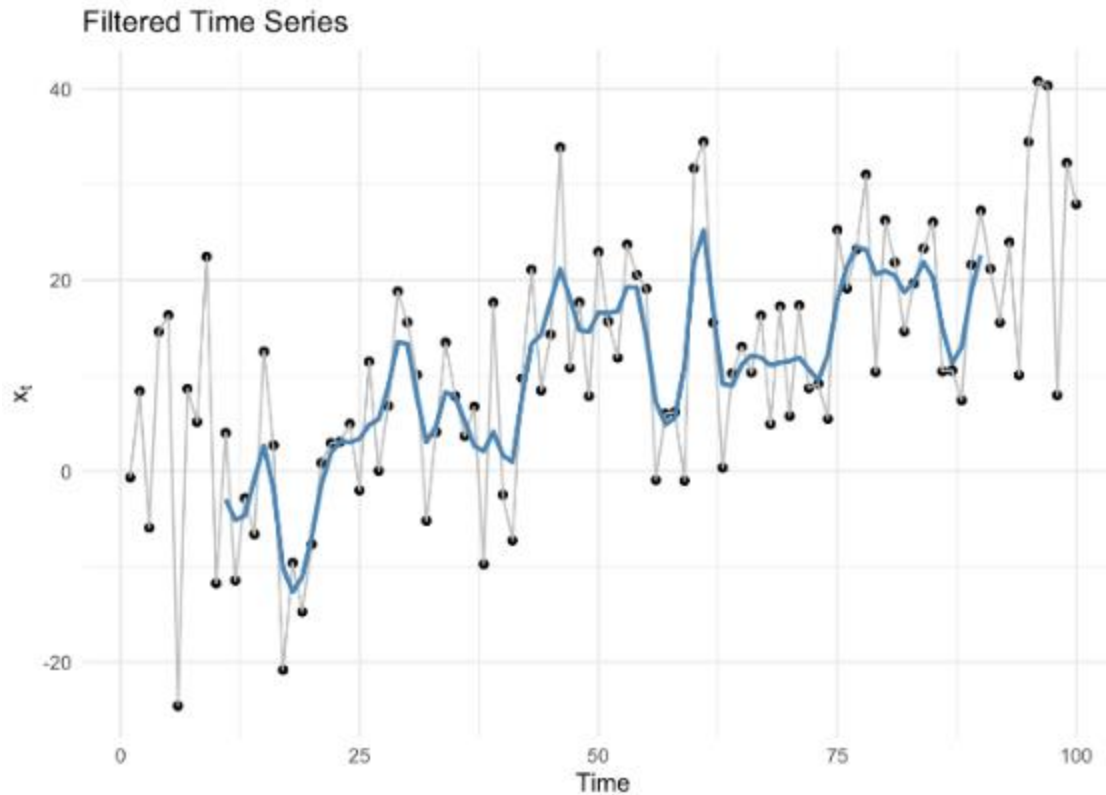
<https://bookdown.org/rdpeng/timeseriesbook/filtering-time-series.html>



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Low-Pass filter



<https://bookdown.org/rdpeng/timeseriesbook/filtering-time-series.html>



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Mathematical Function

- Multiplying
- Dividing
- Polynomials
- Differentials



Machine Learning

Jupyter

- 18094627@student.hhs.nl (Search Martijn Kok)
- Deadline Friday this week
- Best Accuracy



Machine Learning

Questions



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