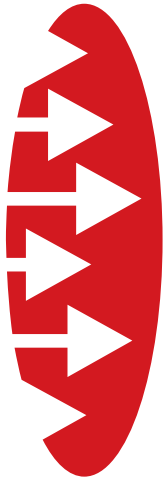

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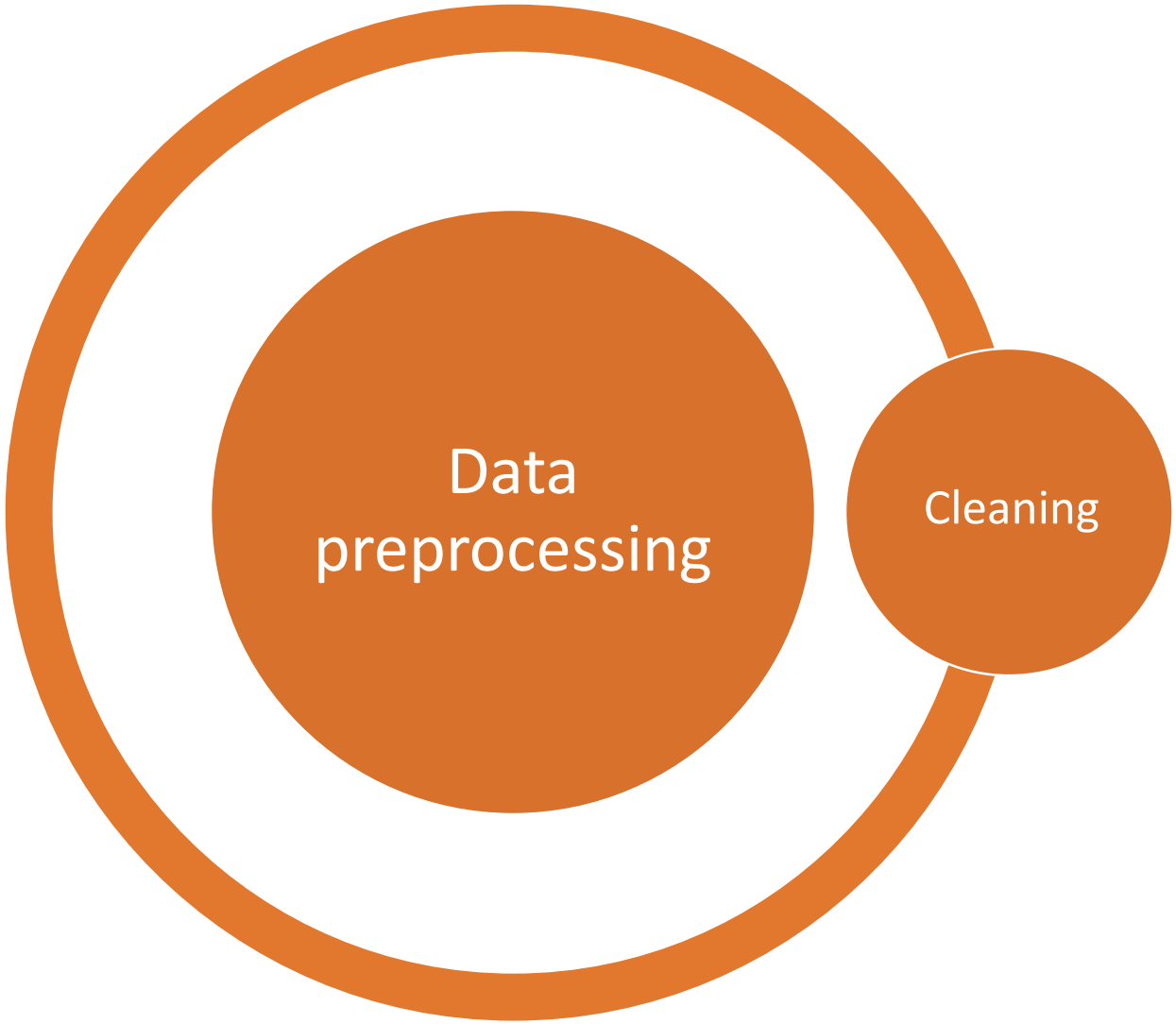
Data Preprocessing for DL

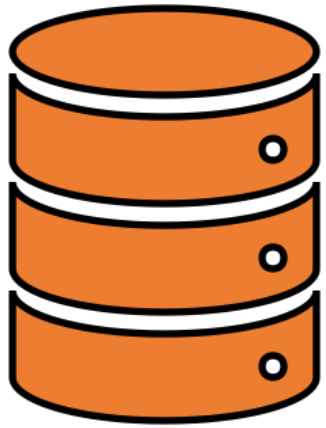
Ing. Ján Pavlus

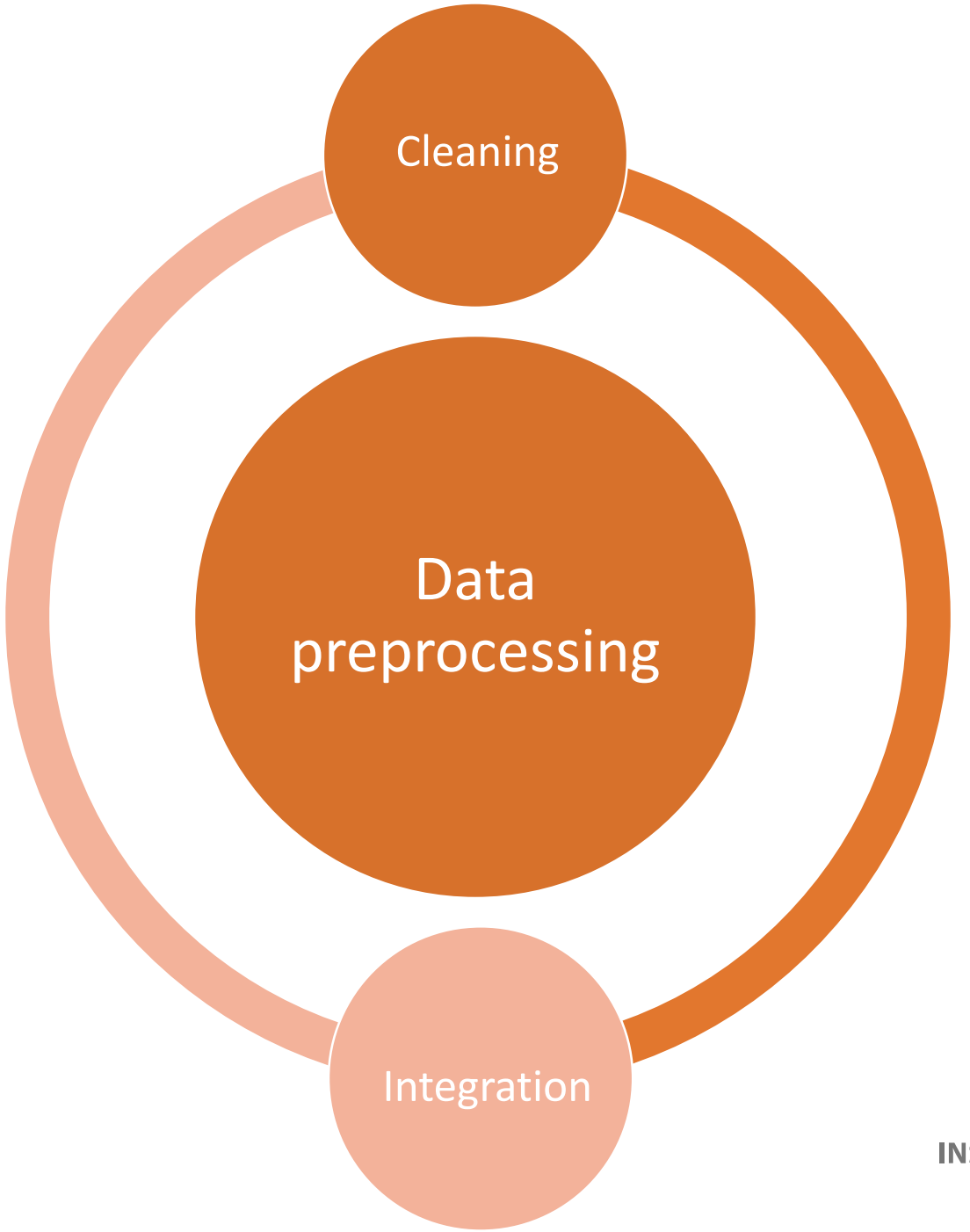

Data preprocessing
Cleaning

Cleaning

Data cleaning

- Missing values
- Noisy data
- Removing outliers
- Duplicities





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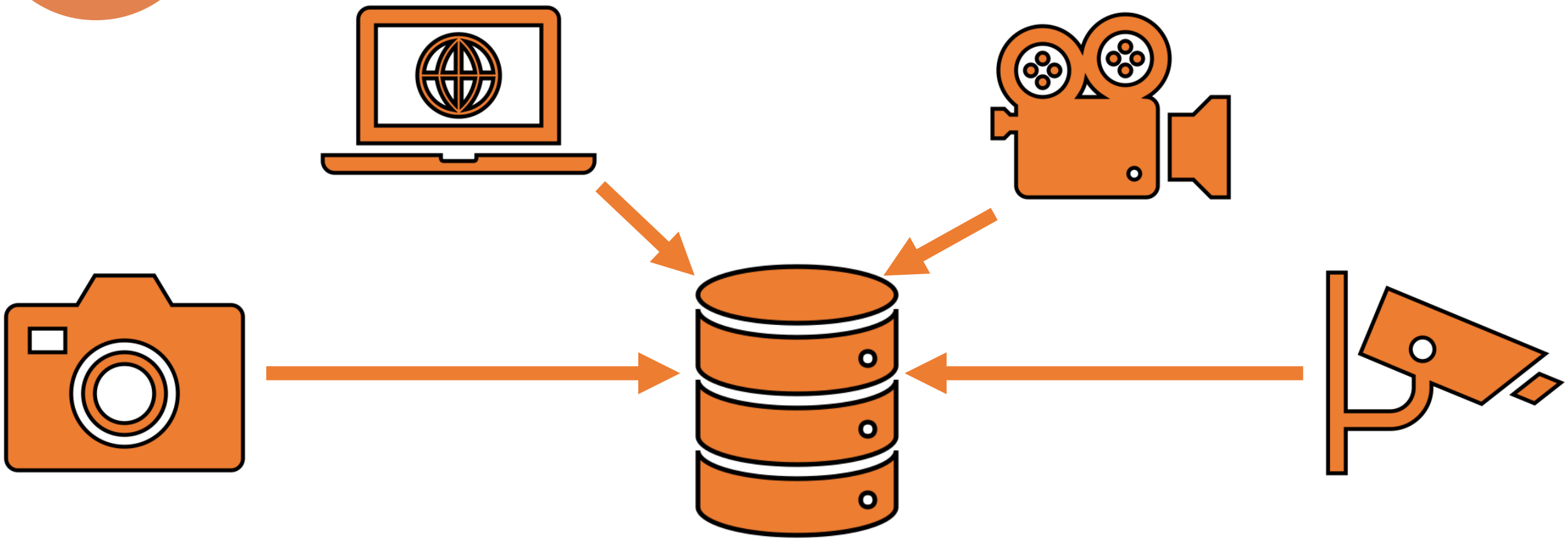
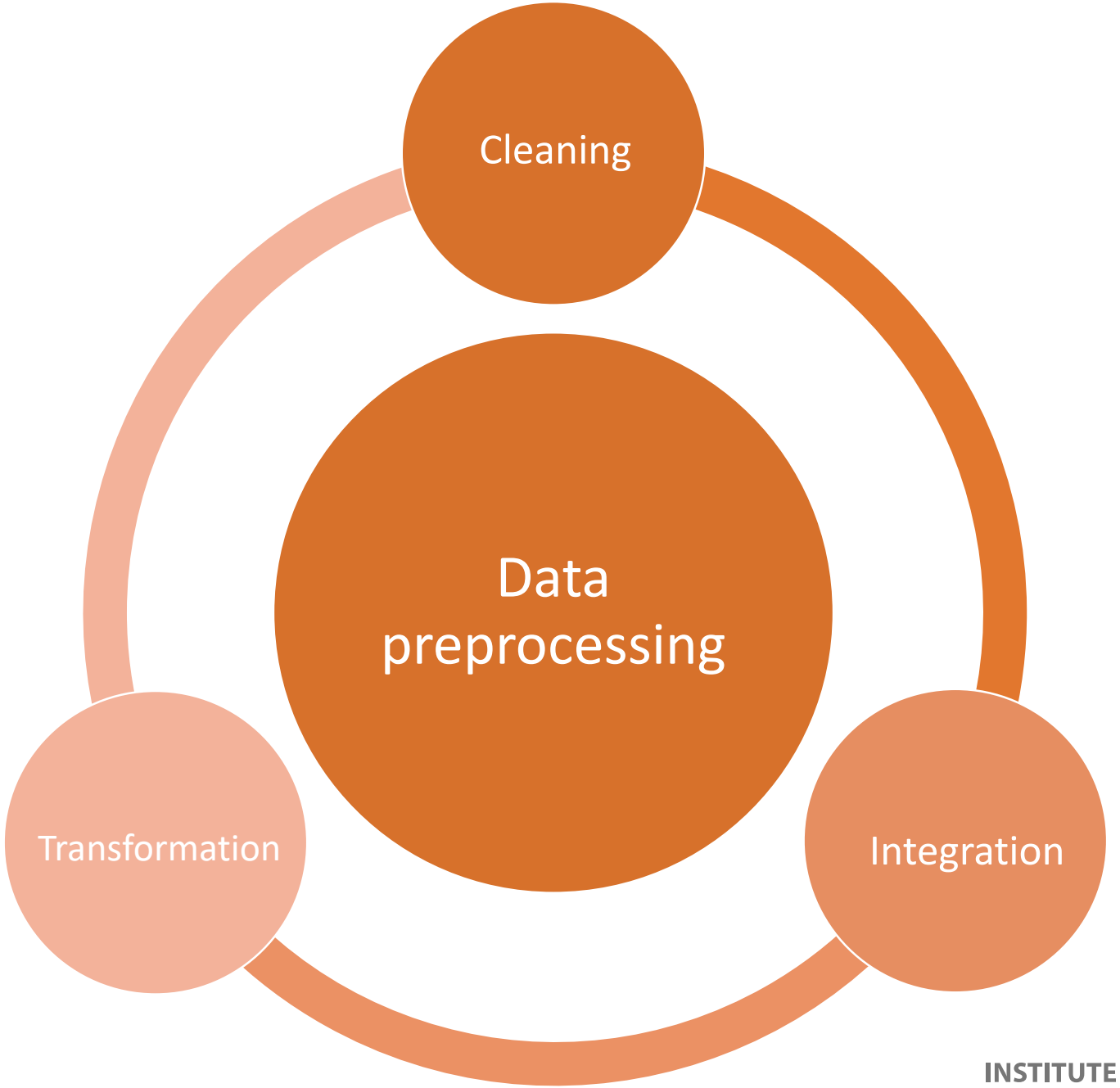
Integration

Data integration





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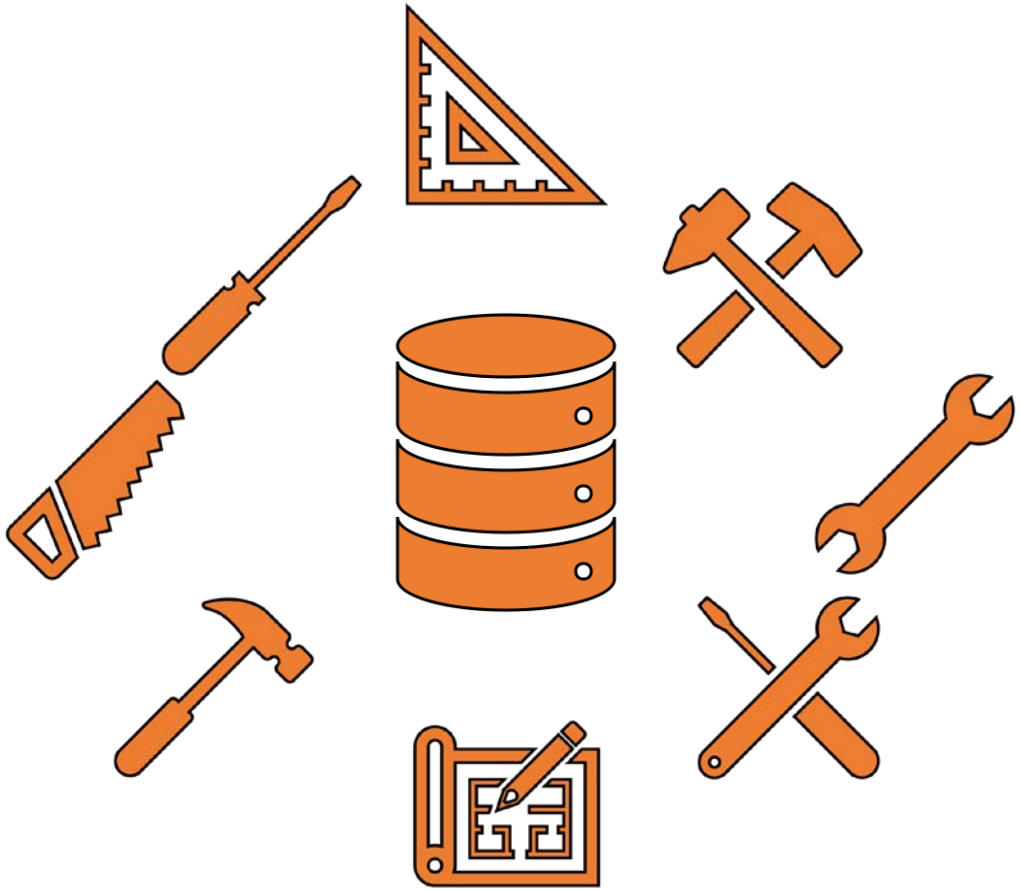
Transformation

Data transformation

- Normalization
- Attribute selection
- Augmentations



Transformation

Data transformation - Augmentations

- Extend dataset
- Extend variability
- Robust system
- Prevent from overfitting

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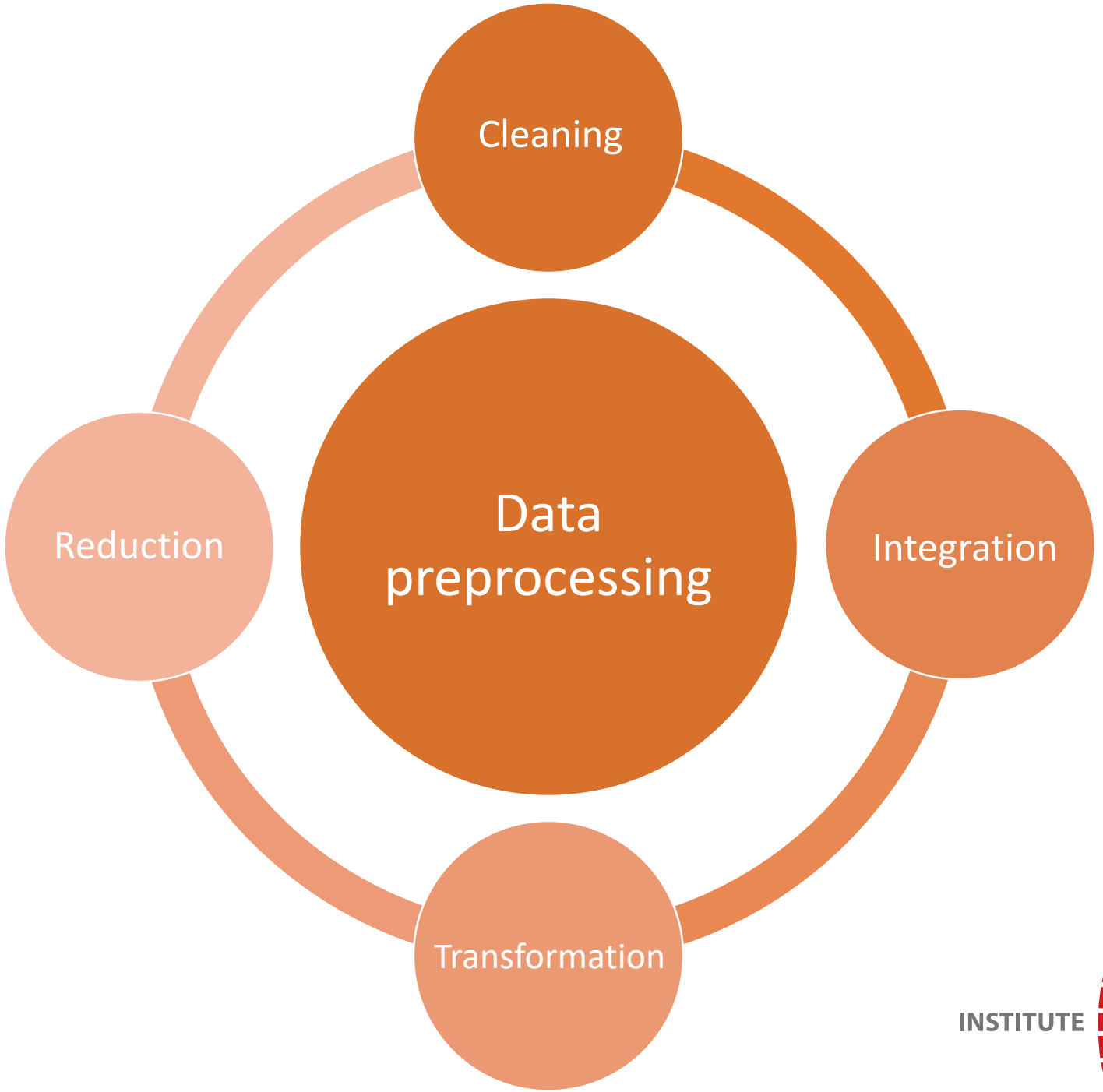

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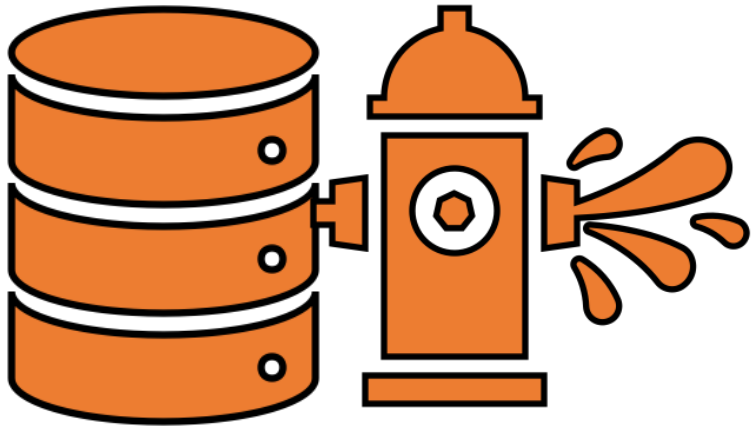
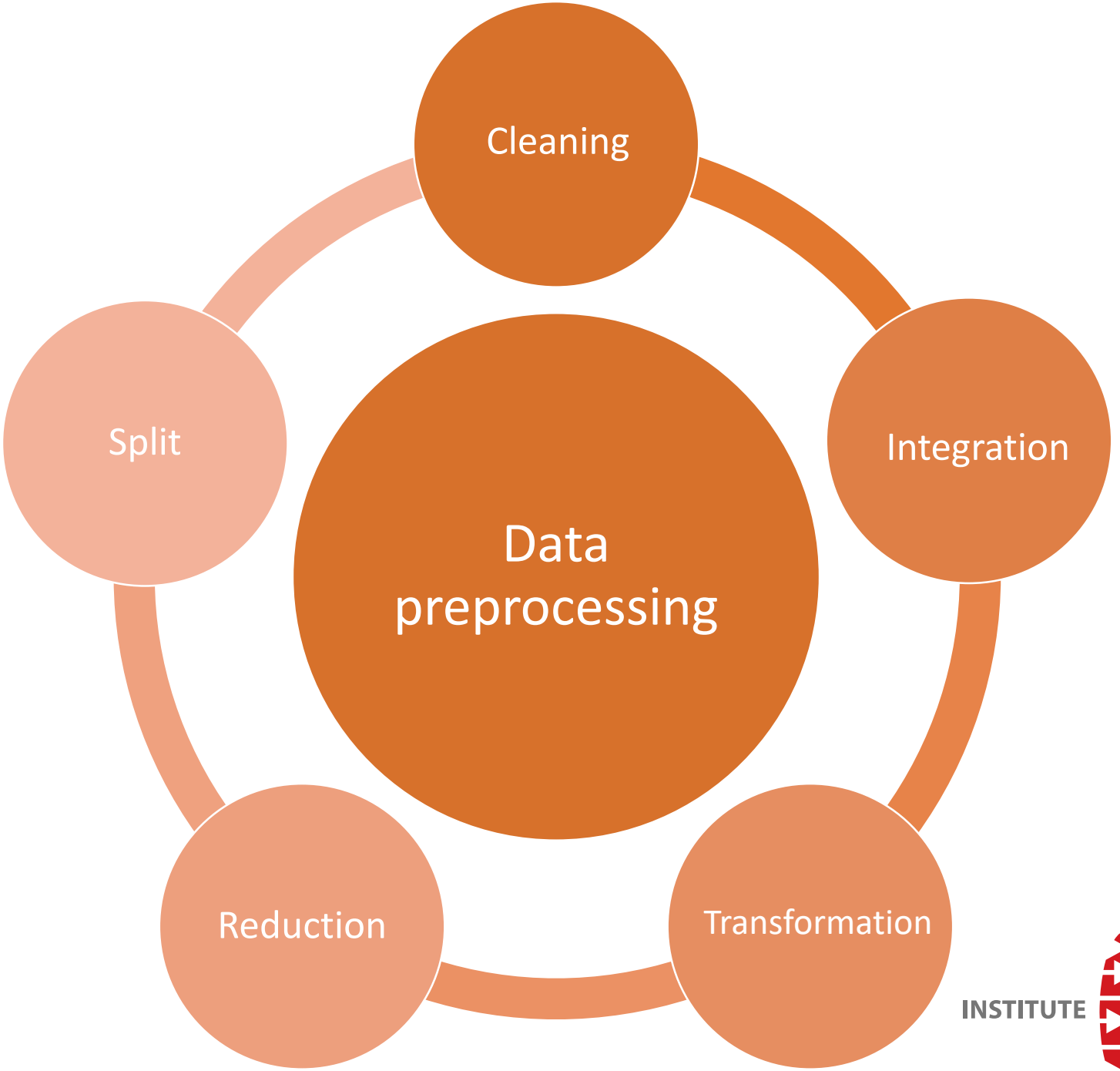
Reduction

Data reduction

- Compress data
- Choose right representation
- Remove unnecessary attributes





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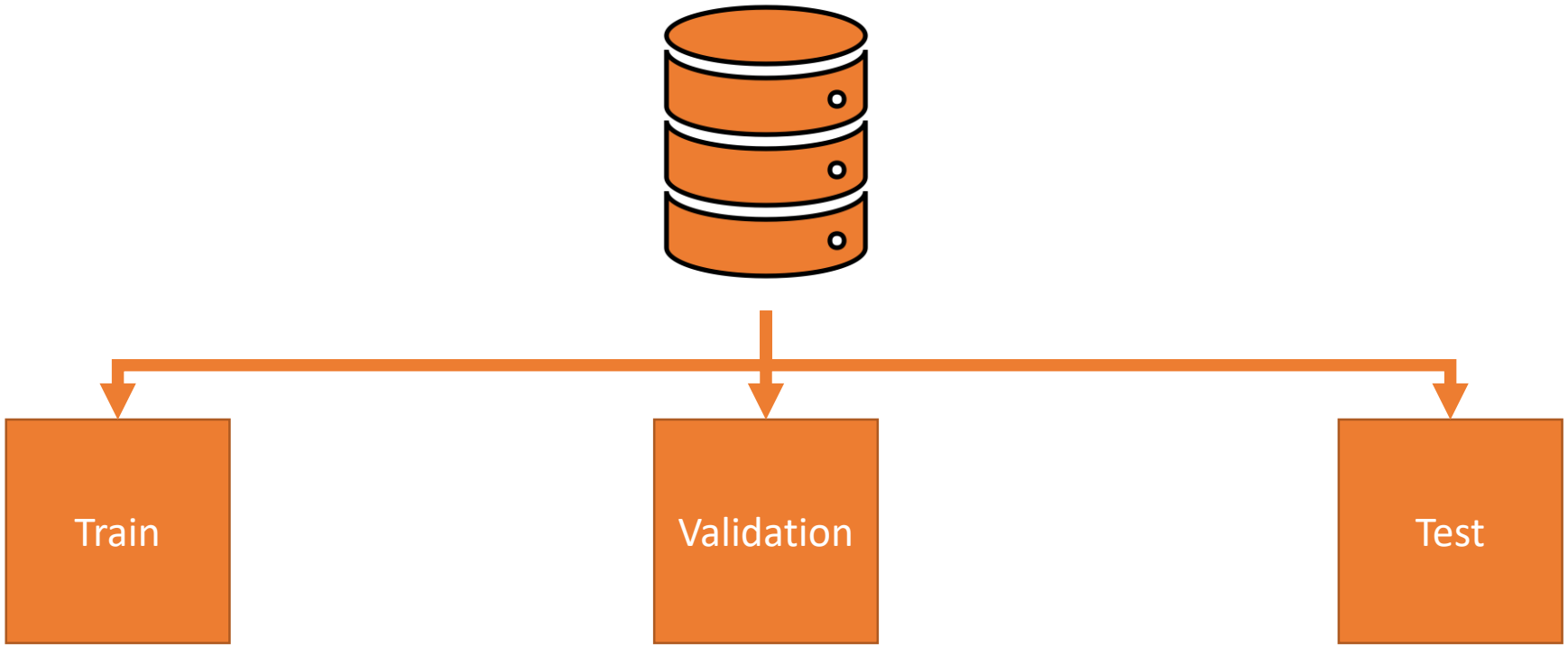
Storage

Data split



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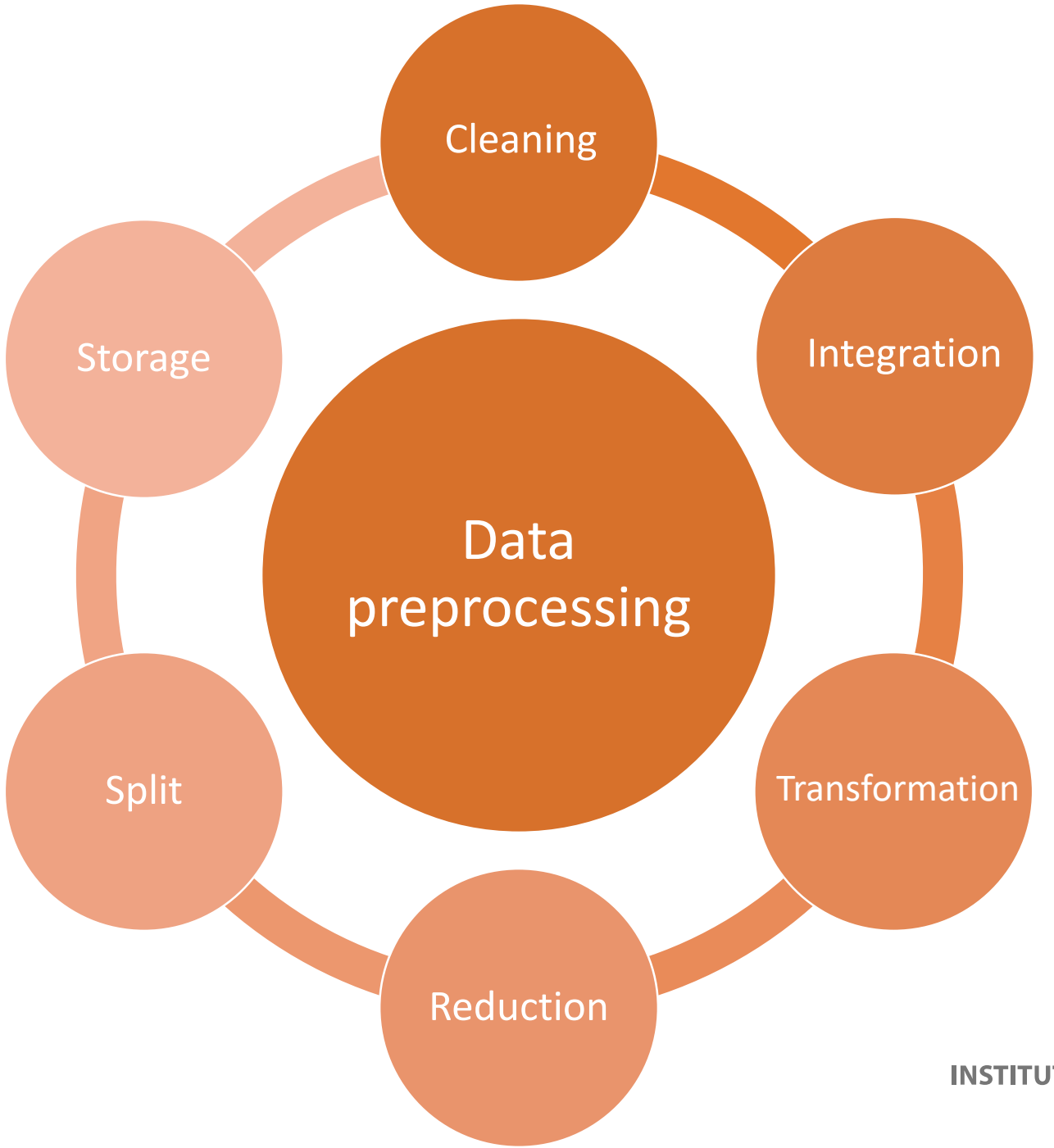

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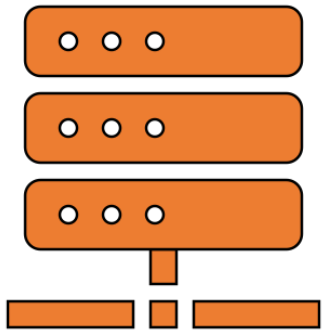
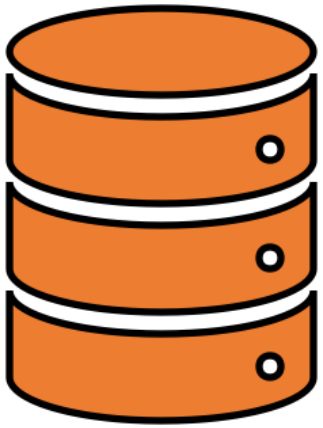
Storage

Data storage

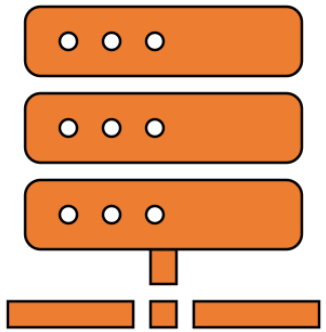


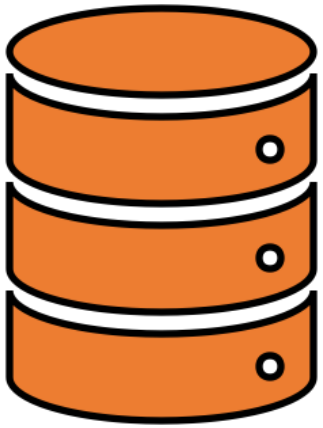
HDD



Storage

Data storage



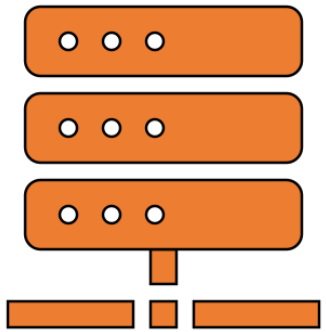


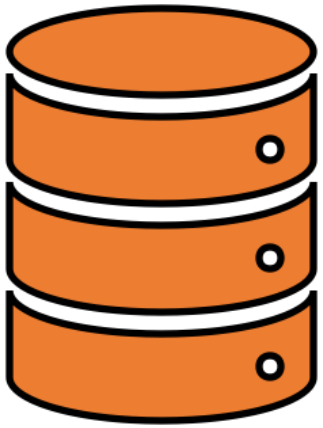
HDD

+ Cheap

Storage

Data storage



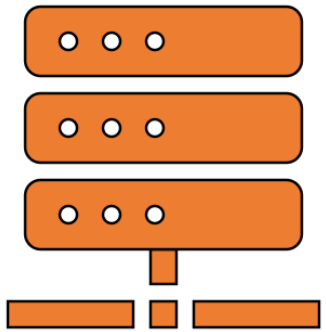


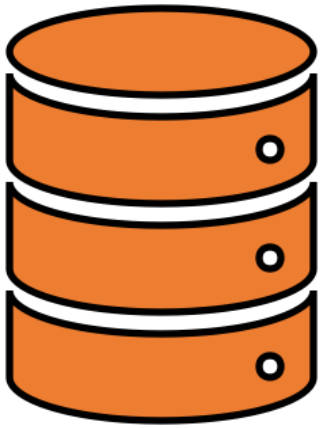
HDD

+ Cheap
+ Store big data

Storage

Data storage



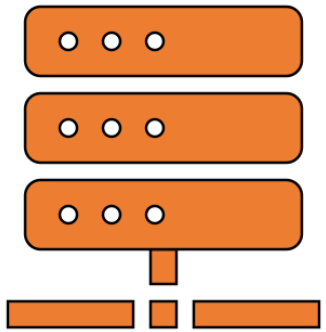


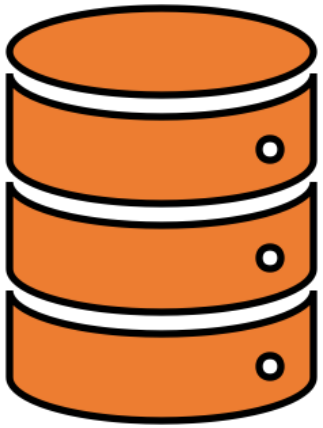
HDD

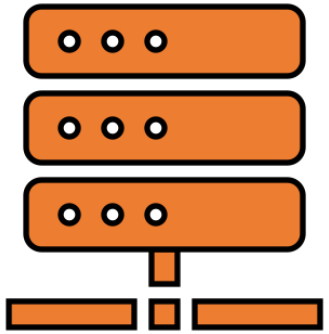
+ Cheap
+ Store big data
- Slow

Storage

Data storage







HDD

- \+ Cheap
- \+ Store big data
- \- Slow

SSD

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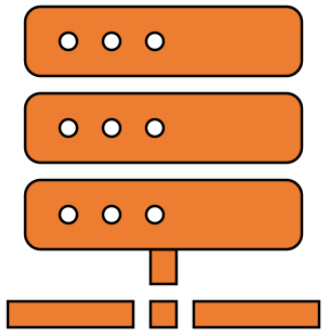
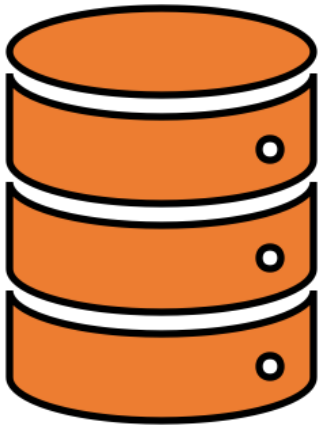
Storage

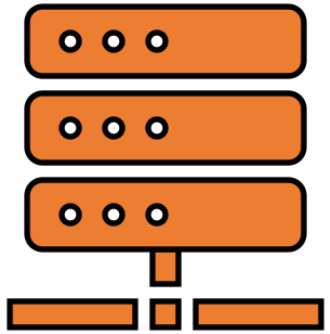
Data storage



HDD

+ Cheap
+ Store big data
- Slow





SSD

+ Really fast

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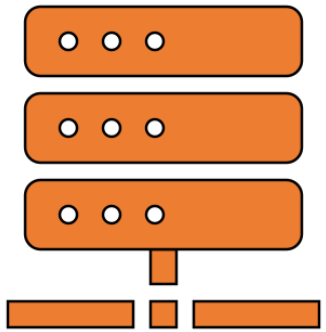
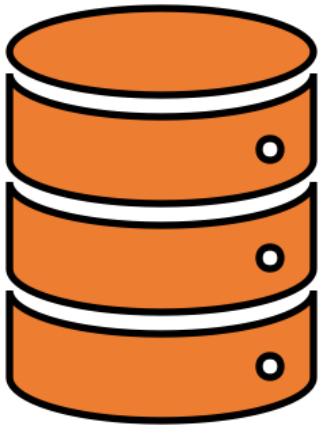
Storage

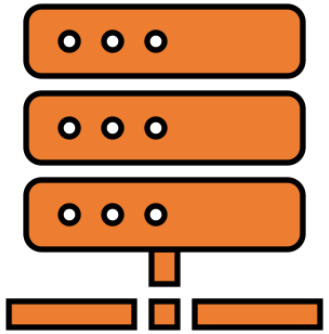
Data storage



HDD

+ Cheap
+ Store big data
- Slow





SSD

+ Really fast
- Expensive

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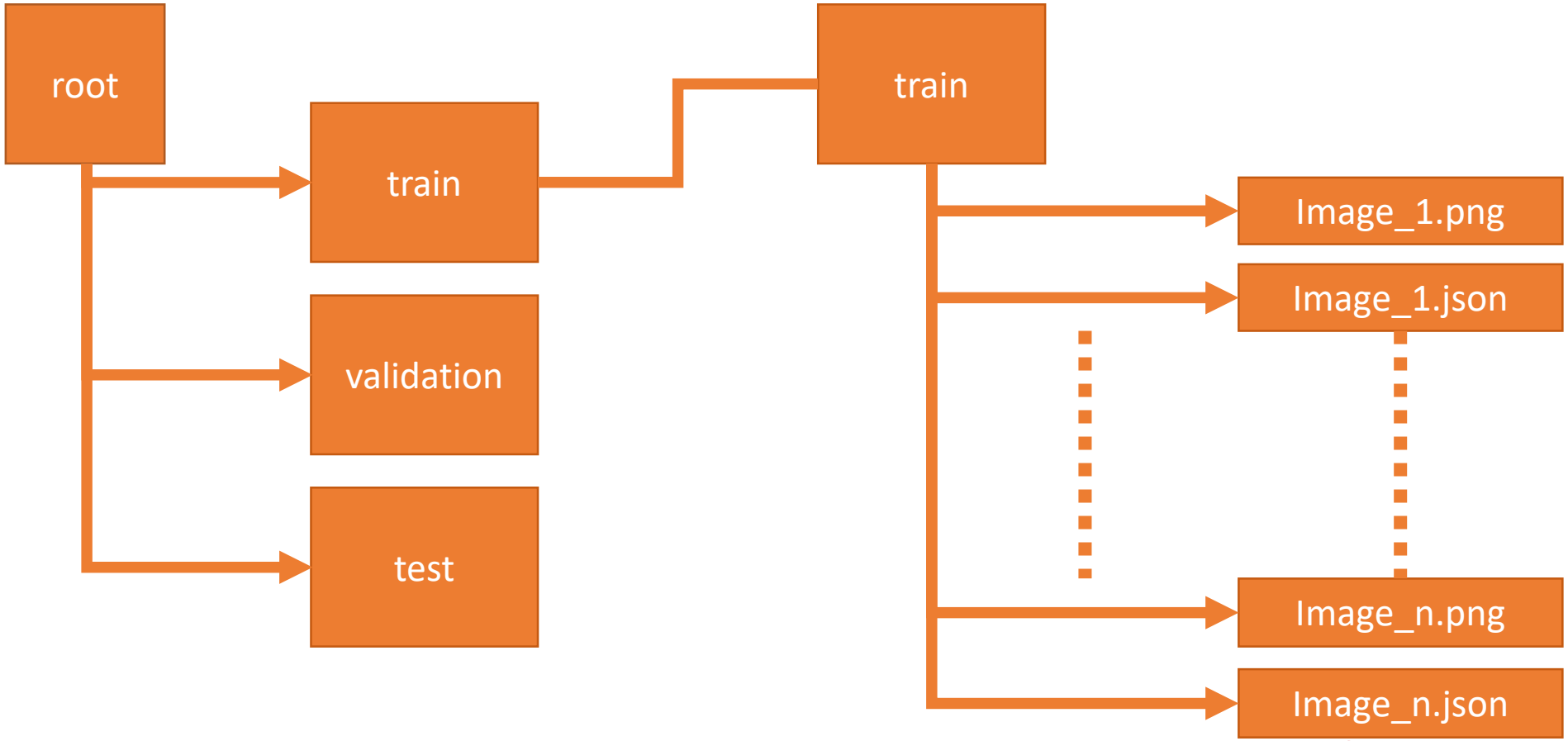
Storage

Data storage – folder structure



Dataloader

- Load data

Dataloader

- Load data
- Multithread

Dataloader

- Load data
- Multithread
- Provides data for the neural network

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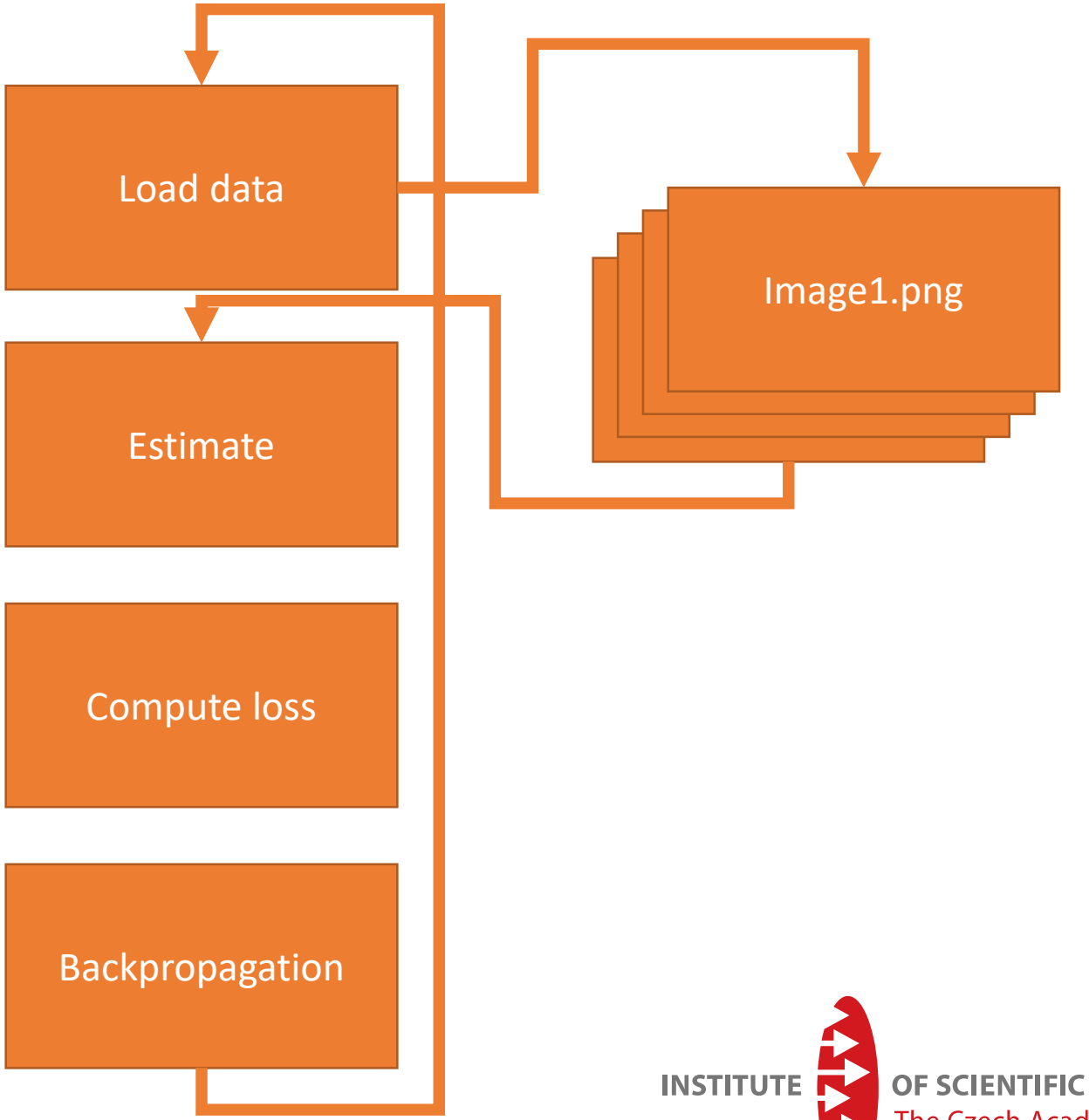
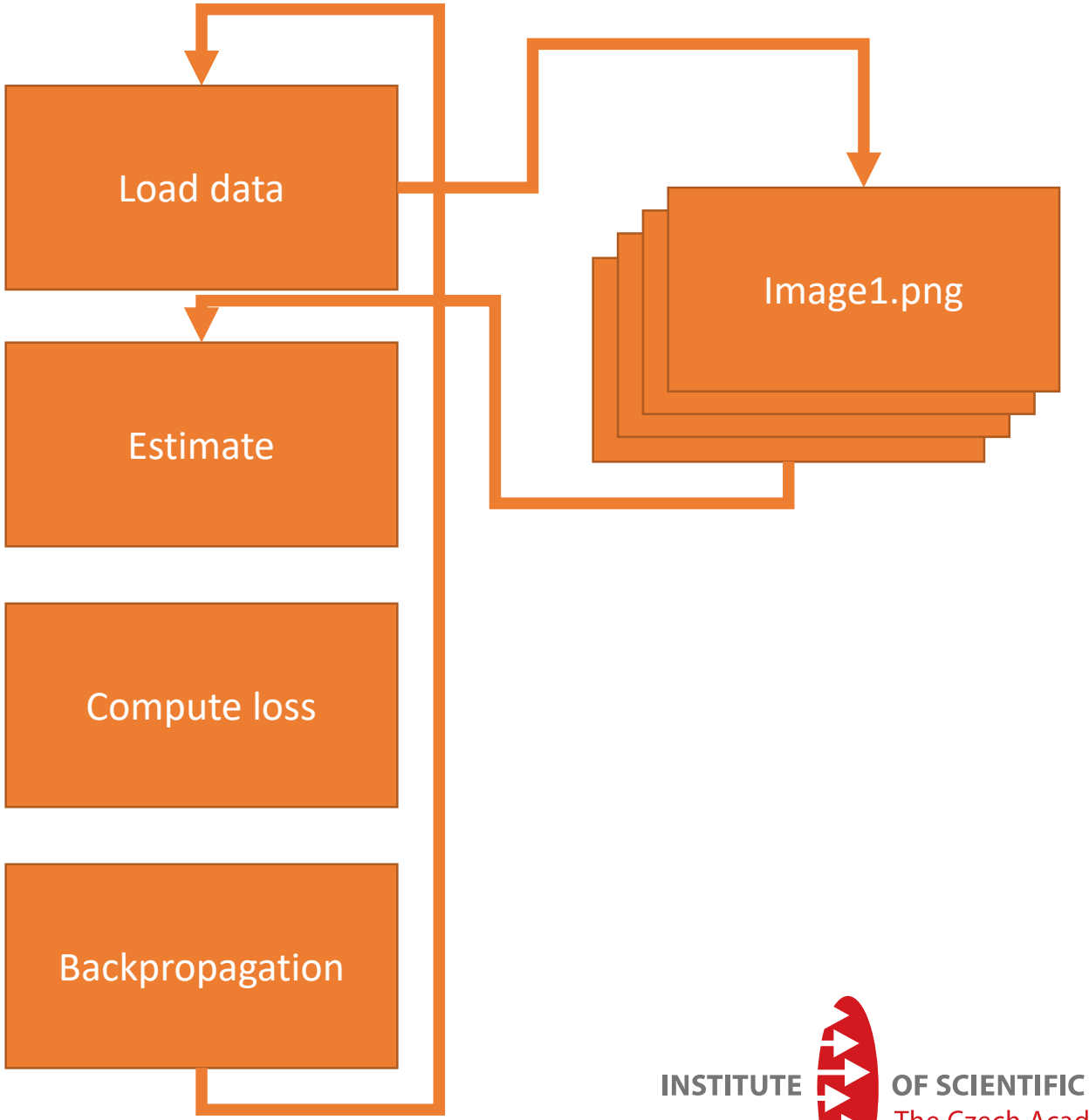
Dataloader

- Load data
- Multithread
- Provides data for the neural network
- Create batches



Dataloader

- Load data
- Multithread
- Provides data for the neural network
- Create batches
- Chunk data



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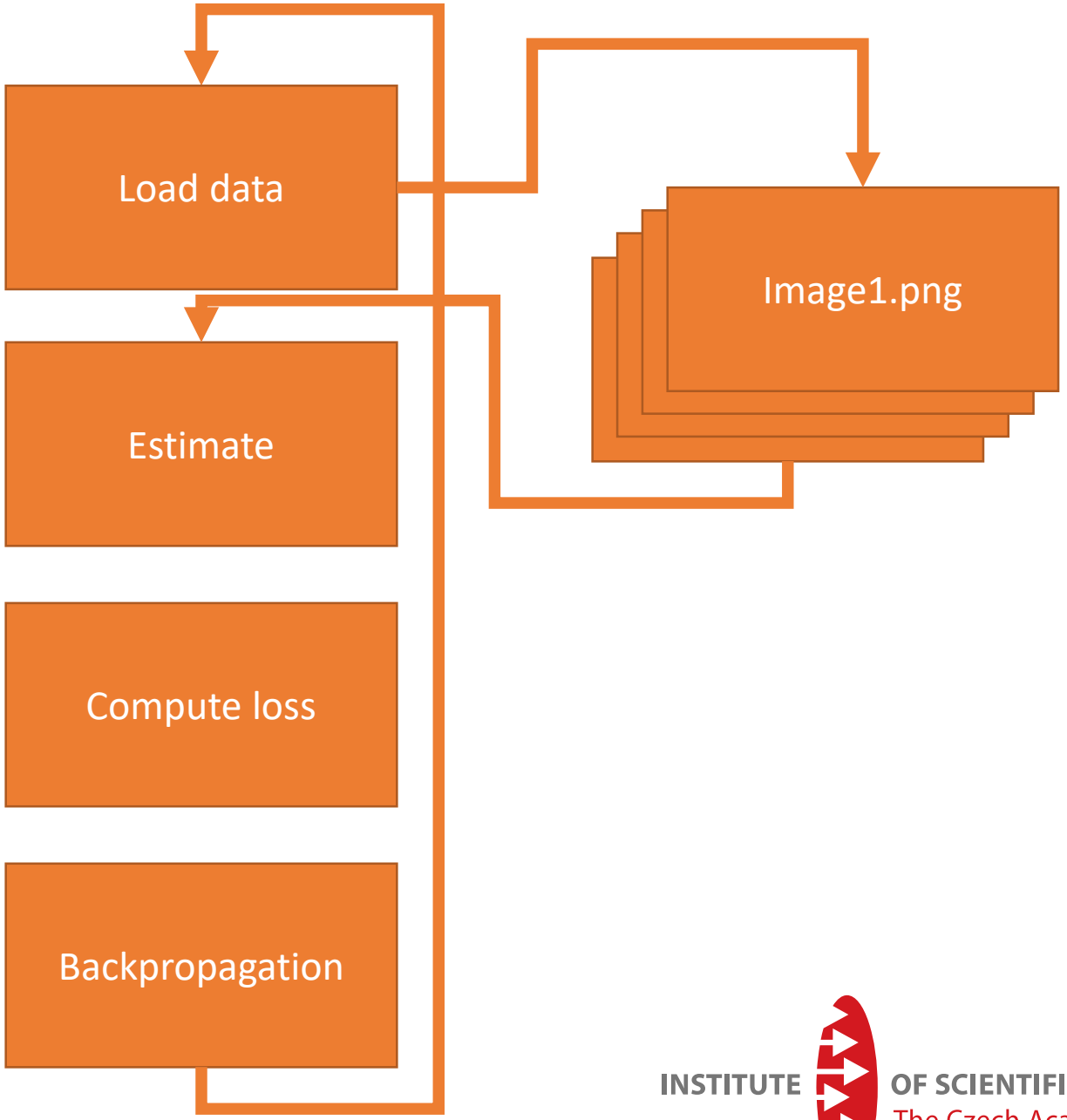
Dataloader

- Load data
- Multithread
- Provides data for the neural network
- Create batches
- Chunk data
- Make online augmentation



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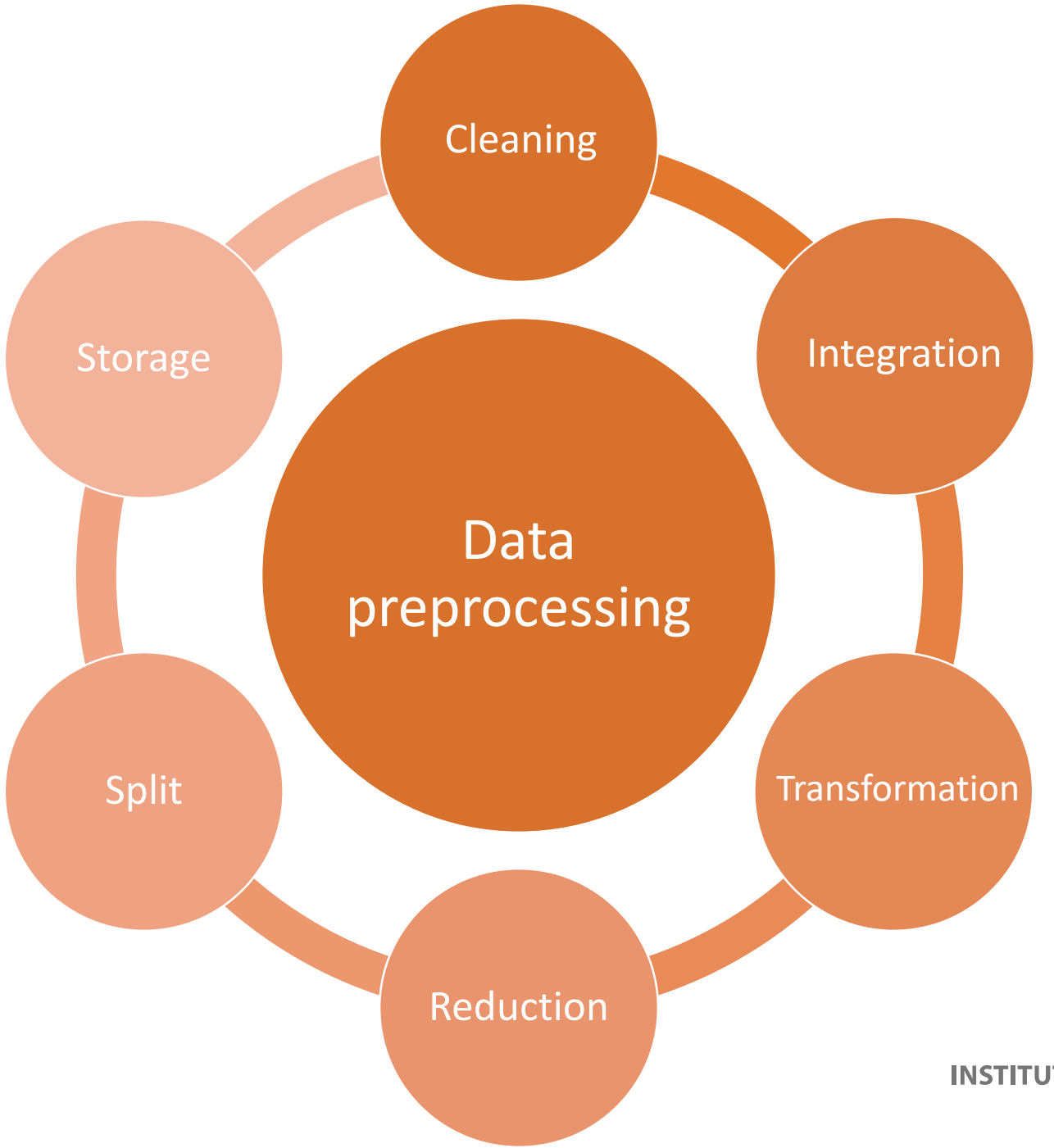

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