Algorithmus Schmiede

We develop computer programs that solve complex tasks.

Data Science

Numerics

Physics

Project Reference:
Fusion of Sensor Signals

Algorithmus Schmiede

We develop computer programs that solve complex mathematical / technical tasks.

Our employees have a doctorate in natural sciences.
We program in **Python** and **C++**.

You benefit from:

- Algorithms with maximum reliability
- A deep understanding of physical relationships
- Scientific way of working

Fusion of Sensor Signals

Fusion of different information enables significant increases in measurement accuracy.

Contents:

- Development of a model for merging different information of a measured object
- Implementation of parameter optimization routine to determine the most probable object given the available information

Challenges:

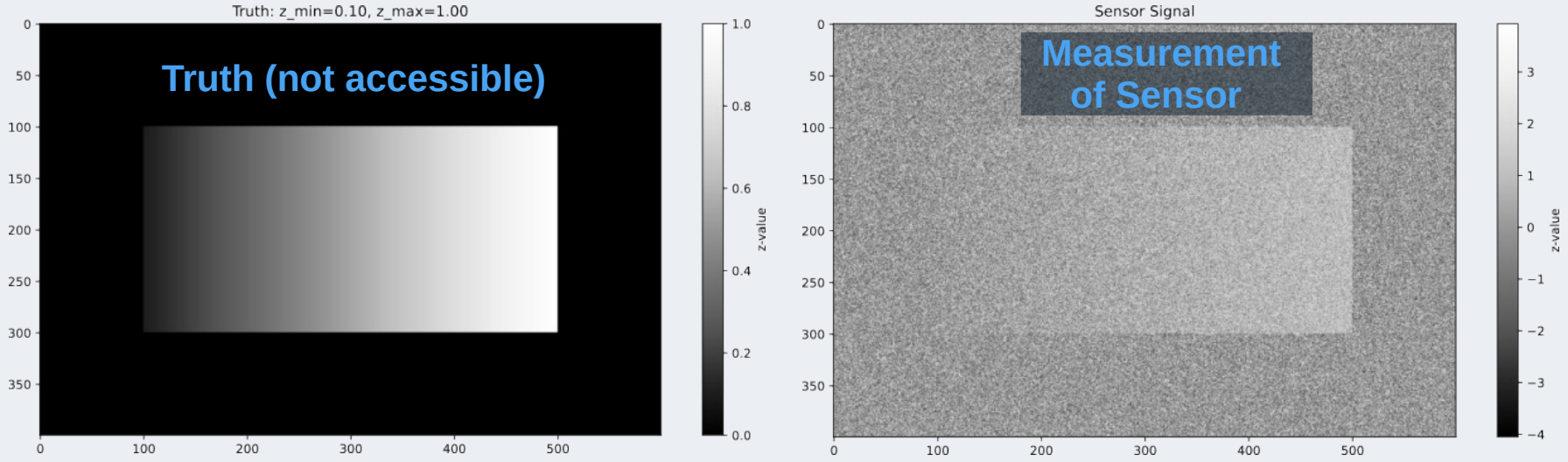
- Development of robust model with low runtime
- Correction of sensor-specific deviation (e.g. statistical noise)

Fusion of Sensor Signals

Example: 2D height measurement of wedge-shaped object

Information:

- Sensor: x-coordinate, y-coordinate, height (=color value of the pixel)
- Domain knowledge: Wedge-shaped objects with linear gradient

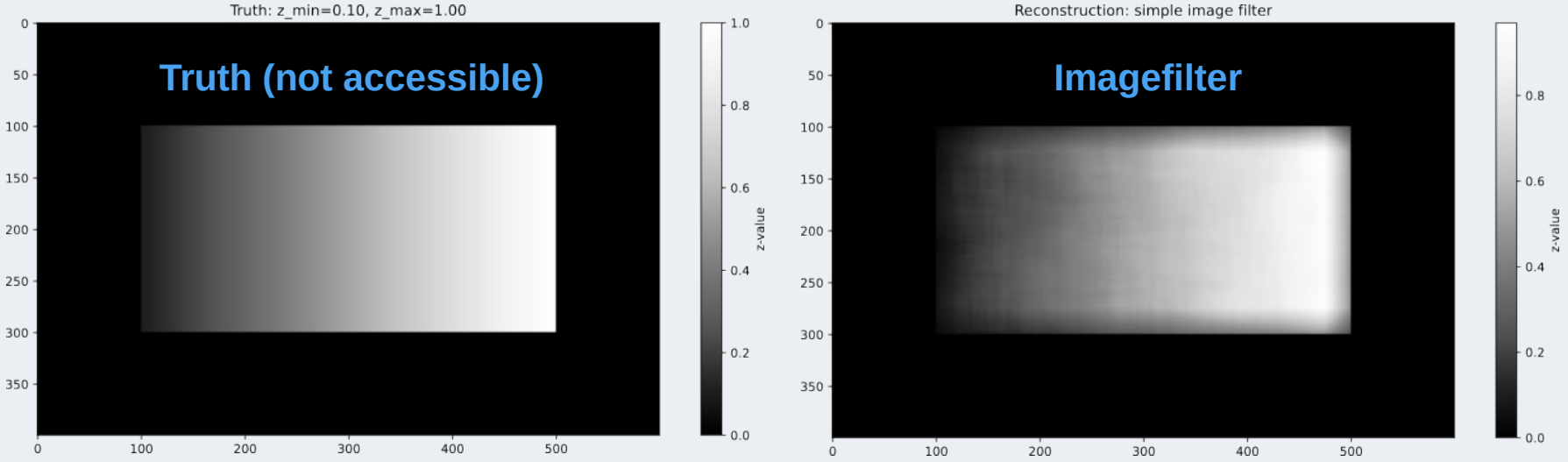


Fusion of Sensor Signals

Typical procedure for correcting sensor noise does not include the additional information on the "wedge-shaped object".

For example image filter:

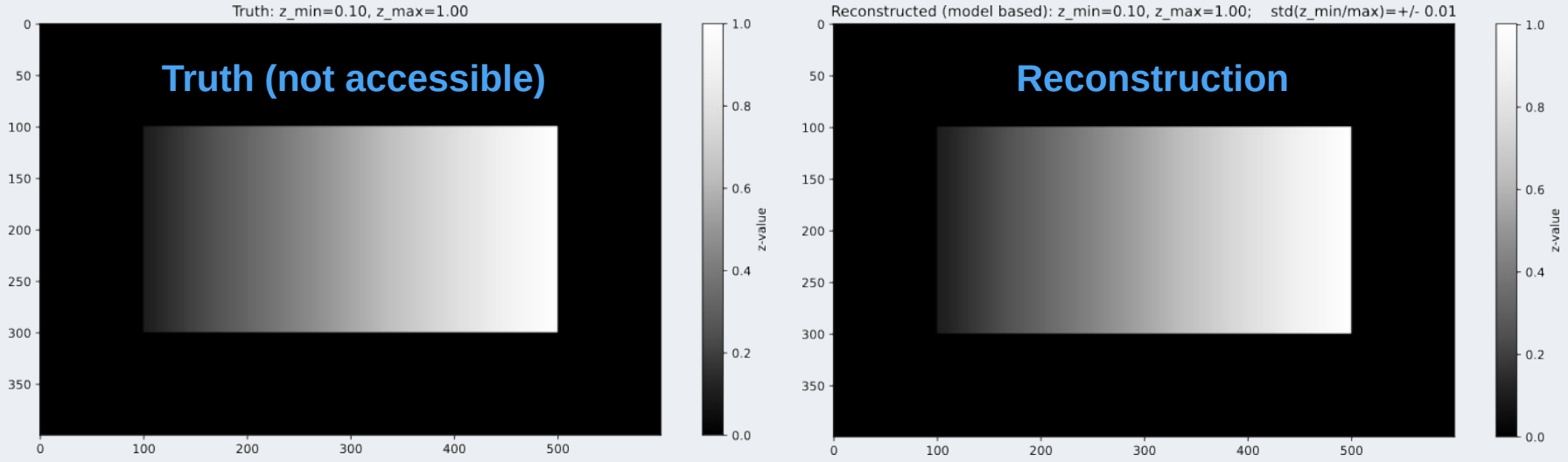
- washes out edges,
- particularly heavily washed out corners,
- object still has slight noise



Fusion of Sensor Signals

Procedure of “Algorithmus Schmiede”:
Generation of wedge-shaped object and parameter optimization until maximum agreement with the measurement data is achieved.

- Parameterization via height of the wedge (z_min, z_max).
- Accuracy of the reconstruction: Up to 10% (z_min) or 1% (z_max).



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I am happy to advise you on your project idea.

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