

Analyzing data from imaging experiments

Anders Kaestner :: Laboratory for Neutron Scattering and Imaging



3D and 4D imaging experiments produce large amounts of data



Gigabytes...
... or even
terabytes of data



Purpose of the experiment?

- 3D visualization
- Sample characterization
- Determine process parameters
- etc

Which information do you expect from the data?

Quantitative

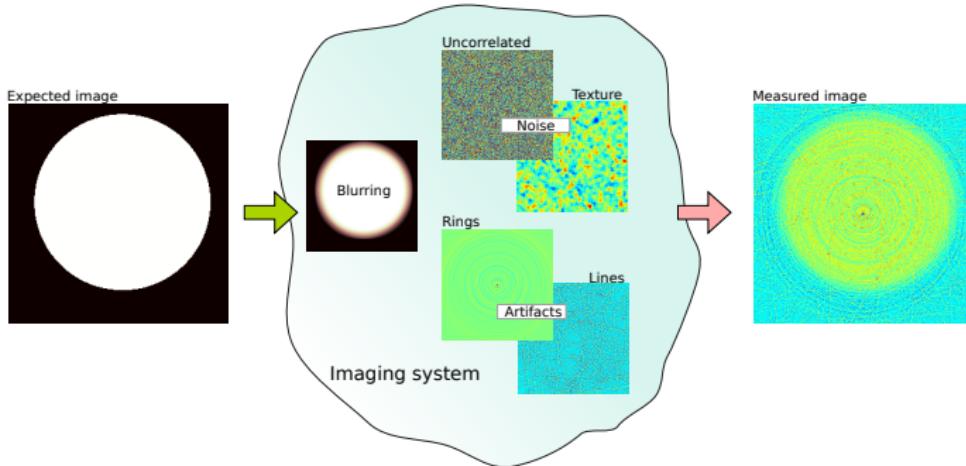
- Material composition
- Material transport

Structure

- Identify and count items
- Measure volume
- Characterize shape

This will affect the choice of processing methods ...

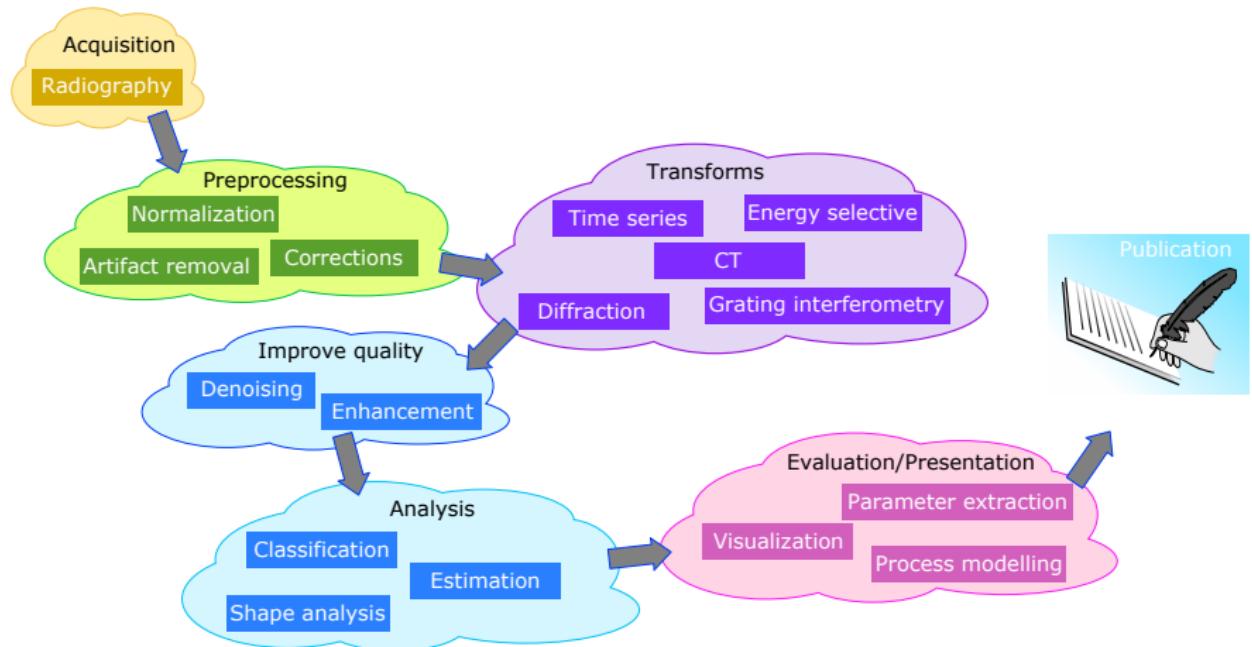
... and may even affect the choice of experiment strategy.



Factors affecting the analysis

- Resolution
- Small relevant features
- Sample movement
- Noise
- Inhomogeneous contrast
- Artefacts

A typical processing chain



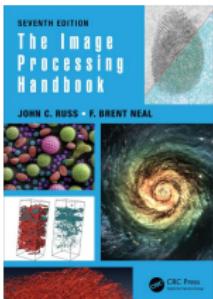
Nov. 18th Ground Truth and Datasets (Lecturer: Kevin Mader)

Dec. 2 Processing: Images, Noise, Transformations, and Filters

Dec. 9 Processing: Segmentation, Morphological image processing

Dec. 16 Analysis: Pixels to statistics – Analysis strategies

Main literature:



John C. Russ
The Image Processing Handbook
CRC Press
ISBN 9781498740289
[Download link](#)