1. High speed video recording of welding processes

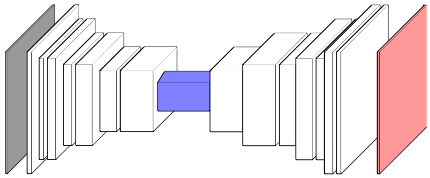
Raw .cine video files

Preprocessing:

- Save video into .npz files
- Manual labels
- Data augmentation

Input image

Segmentation map



3. Trained Fully Convolutional Network

Grid search and model comparison

4. Test data evaluation

Generate segmentation mappings for every frame

2. Training phase

Architecture proposals:

- U-Net
- DeconvNet
- MultiResUnet

Loss:
Jaccard distance

$$1 - \frac{|A \cap B|}{|A \cup B|}$$

5. Postprocessing

Compute position, velocity, acceleration, etc. using segmentation maps