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Stellingen behorend bij het proefschrift getiteld

Supervised Learning in Medical Image Registration

door **Hessam Sokooti**

1. Predefined dissimilarity metrics as used in conventional image registration can be learned by a convolutional neural network in an end-to-end fashion (Chapter 2).
2. The numerous optimization steps in conventional image registration techniques can be reduced to a single step (Chapter 3).
3. By combining features from both image registration and image intensities, improvements can be obtained in predicting registration misalignment (Chapter 4).
4. Step-wise and hierarchical refinement can improve the prediction of registration misalignment (Chapter 5).
5. Defining a proper ground truth or even a golden standard is a challenging task, even more so for nonrigid registration.
6. Deep learning based image registration methods are faster than conventional methods, with almost equal performance.
7. Algorithms trained on artificial training data generation as ground truth may potentially lead to higher performance than ones trained on human experts annotations.
8. The limitations of performance metrics should be considered when designing image analysis algorithms including image registration methods.
9. The number of public datasets on medical image registration is very small compared to its wide application.
10. Reporting and documenting methods with less promising results is as advantageous as reporting ones with promising results.
11. Code does not only increase the reproducibility but importantly enormously clarifies the paper.