

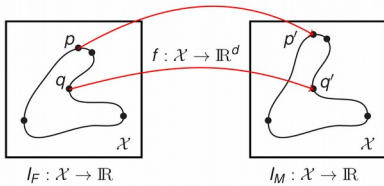
Human inspired deformable medical image registration

Recurrent Registration Neural Networks for Deformable Image Registration

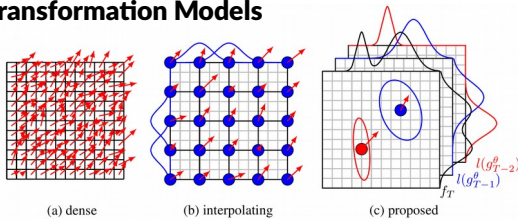
Robin Sandkühler¹, Simon Andermatt¹, Grzegorz Bauman^{1,2}, Sylvia Nyilas³, Christoph Jud¹, and Philippe C. Cattin¹

Image Registration

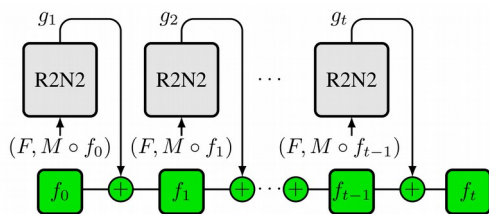
- Deformable registration is essential for medical image analysis methods assuming spatial correspondence



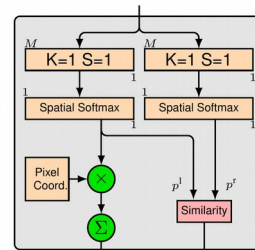
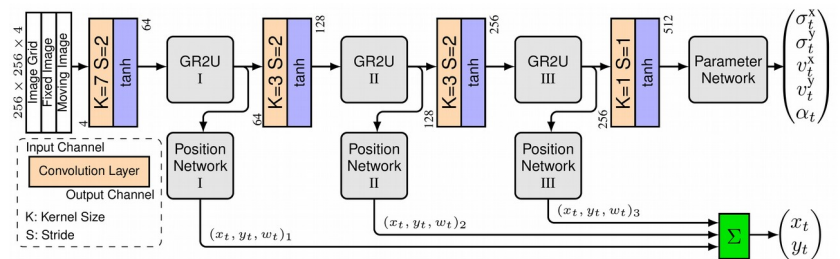
Transformation Models



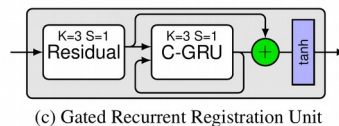
Sequence-based Registration



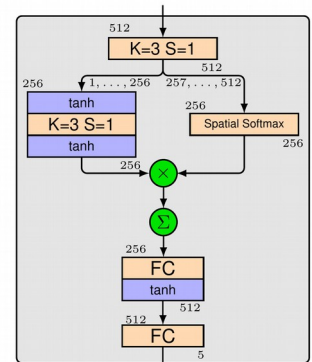
Network Architecture



(a) Position Network

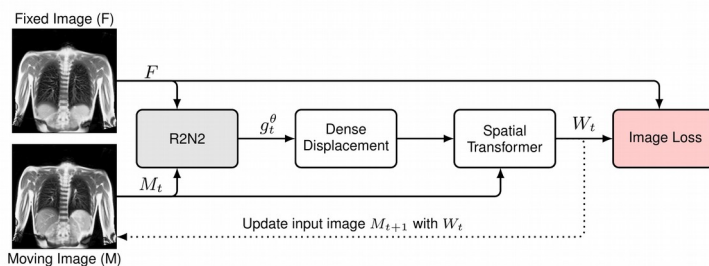


(c) Gated Recurrent Registration Unit

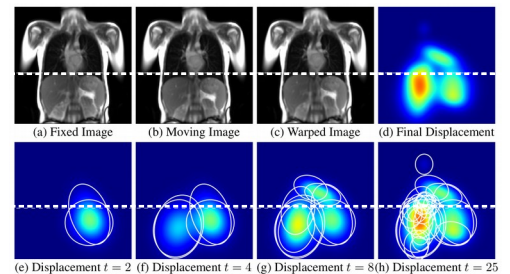


(b) Parameter Network

Training



Results



Discussion

- We achieve a speedup of ~ 15 for the computation time compared to the B-spline registration. In addition, we need only $\sim 7.6\%$ of the amount of parameters to describe the final transformation.
- For future work we will including uncertainty measures for the registration result as a possible stopping criteria. This could then be used to automatically determine the number of steps needed for the registration.

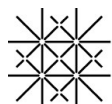


¹Department of Biomedical Engineering, University of Basel, Switzerland

²Department of Radiology, Division of Radiological Physics, University Hospital Basel, Switzerland

³Pediatric Respiratory Medicine, Department of Pediatrics, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland

⁴Department of Diagnostic, Interventional and Paediatric Radiology, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland
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University
of Basel



Department of
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