REGISTRATION EXPERIMENTS - CONTINUED

1st December 2004

1 Items to Report

- There are some technical problems that prevent group-wise optimisation from being investigated at this stage.

2 Experiments

2.1 28 November 2004

2.1.1 Experiments 1, 2

Description: A long optimisation with different image resolutions in NRR. The second of the two uses coarser resolution.

Intent: prove that going to finer resolution (with up to 20x20x20 knot-points does not improve, based on very long registration.

Results: There is no apparent difference between the results, maybe only at sub-pixel level.

Conclusions: Lowering the level, i.e. increasing the resolution, does not improve registration results.

2.1.2 Experiments 3, 4, 5, 6

Description: Varying Weight from 0.5 to 0.0005 with `res_info`.

Intent: Trying to see if res_info works when shape-intensity weighting is changed. If results are uniform across all weight values, the OF might be worth investigating, as was done for `MI` before.

Results: A tiny difference can be seen, but still equally-bad results.

Conclusions: Res_info OF does not register data with the current set of parameters, regardless of the weight set for shape and intensity.

2.1.3 Experiments 7, 8, 9, 10

Description: As above, for eigen.

Intent: Showing that `Eigen` OF works better if weight is changed

Results: Slight difference, but still equally-bad results.

Conclusions: `Eigen` OF does not register data with the current set of parameters, regardless of the weight set for shape and intensity.

2.2 29 November 2004

2.2.1 Experiments 1, 2

Description: Given the observation that refined resolution is not very necessary, a large number of knot-points (up to 50x50x50) is being considered. Experiment 1 is longer than 2.

Intent: Showing that many knot-points at coarse resolution lead to good results.

Results: Good registration that continues to improve slightly at the later stages.

Conclusions: A large number of knot-point required a great deal of time for little (yet prevalent) improvements.

2.2.2 Experiments 3, 4, 5, 6

Description: A collection of experiments that use `mdl_matcher`. Length (number of iterations) varies and the number of images in the set remains 4.

Intent: Technical problems

Results: Technical problems

Conclusions: Technical problems

2.2.3 Experiments 7, 8

Description: Similar to 26112004-7 and 26112004-8, but this time group-wise optimisation might work with reverse matcher.

Intent: Technical problems

Results: Technical problems

Conclusions: Technical problems

2.3 30 November 2004

2.3.1 Experiment 29112004-9

Description: Same as 29112004-7 and 29112004-8 above, but much shorter. Performed to see if results of the long registration will go in the right direction (run simultaneously).

2.3.2 Experiment 30112004-1

Description: An even shorter variant of the above, just to ensure there is no error to tackle.

2.3.3 Experiment 30112004-2

Description: As previous, without any groupwise stages because the previous experiment resulted in a segmentation fault at the point of writing of the warps.

Result: this succeeded in reaching completion, but the output is small and odd. It is worth seeing why `sequential_matcher` crashes when group-wise stages are involved. It is also worth seeing why the output is odd, just as was the case with `mdl_matcher`.

3 Next Experiments

- More groupwise experiments.

- Increase of the set size, e.g. to 8.

- Consider the possibility of adding examples by warping and perturbing the existing examples.

A Setting Files

See individual files in the relevant directories.