REGISTRATION EXPERIMENTS - CONTINUED

6th December 2004

1 Items to Report

- Beginning of investigation and comparison between group-wise registration and pair-wise registration.

- Beginning to get results for information-theoretic objective functions.

- Summary from E-mail:

  I ran a group-wise registration and compared it with a pair-wise one. In certain cases, the former can go beyond points where the latter gets stuck. So that's good news...

  Also, I ran experiments with mdl_matcher. I tried ssd, and I also tried res_info as the OF. Something is happening, but not necessarily an improvement.

  Compare_pair shows something we might expect – an overlap that is about as good as that which is obtained by standard registration.

2 Experiments

2.1 Group-wise versus Pair-wise

2.1.1 03122004-1

Description: `groupwise, sequential matcher`

2.1.2 03122004-2

Description: `pairwise, sequential matcher`

Results: in one of the three non-reference image, the pair-wise fails whereas the group-wise succeeds in registering. In the other two, results are similar.

Conclusions: Group-wise registration may be more robust than pair-wise registration.

2.2 Pairs Comparison

The new tool was used to compare images by warping them to one another via the reference. The results are interesting. They show about the same quality of overlap as one gets for standard registration.

2.3 MDL Matcher

2.3.1 03122004-3

Description: `groupwise, mdl_matcher, ssd`

Results: no registration is approached, but change can be observed.

2.3.2 03122004-4

Description: `pairwise, mdl_matcher, ssd`

Results: no registration is approached, but change can be observed.

2.4 MDL Matcher and Residual Information

2.4.1 03122004-5

Description: `groupwise, mdl_matcher, res_info`

Results: no registration is approached, but change can be observed.

2.4.2 03122004-6

Description: `pairwise, mdl_matcher, res_info`

Results: no registration is approached, but change can be observed.

2.5 Longer Comparison: Group-wise versus Pair-wise

2.5.1 04122004-1

Description: Like 03122004-1, only much longer.

2.5.2 04122004-2

Description: Like 03122004-2, only much longer.

Results: after a very long time (about 3 days), the experiments were aborted.

2.6 Comparison: Pair-wise sequential_matcher versus comp_region_matcher

2.6.1 04122004-3

Description: A fairly normal pair-wise registration using `comp_region_matcher`.

2.6.2 04122004-4

Description: A fairly normal pair-wise registration using `sequential_matcher`.

Observation Worth Mentioning: Pair-wise registration with sequential_matcher sometimes gives better results than that which uses a comp_region_matcher. Usually this is not the case though.

3 Next Experiments

- Test more group-wise optimisations and see if they alway lead to better results.

A Setting Files

Omitted. See text files in the archives.