



Progress Report Submission for C. J. Taylor

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This document encapsulates and overwrites its predecessor from January 4th. It expresses the progress made in a period of roughly three weeks.

Agreed Upon

- Preparation of slides for the upcoming presentation in January or February.
- Rework the presentation abstract while paying careful attention to the terminology used. The abstract was submitted to Shelagh before December 23rd to comply with a deadline.
- Implement a synthetic data generator, preferably with the form of a continuous round bump that varies in height, width and horizontal position.

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- Attempt to get experimental results from MATLAB by running existing or modified code.

Reading

- Paper submission to ICPR.
- Books and journals, as normally expected.

P

rogress Made

Throughout Christmas Vacation

- **January Presentation Abstract** was modified on two occasions and it requires a critical review.

http://www.danielsorogon.com/Webmaster/Research/2004_Abstract

- Presentation slides were constructed and are available under:

http://www.danielsorogon.com/Webmaster/Research/January_Presentation

Sources suggest that the duration of the presentation should be 15 minutes and a 5 minute questioning period follows. There seem to be no clear restrictions on the number of slides presented.

- Construction of MATLAB bumps and experimentation with different 1-D registration routines.
- Some new JPEG images, GIF animations and AVI registration clips are available under:

<http://www2.cs.man.ac.uk/~schestr0>

Bump registration clips are available from:

<http://www2.cs.man.ac.uk/~schestr0/Video>

Some results are available under:

<http://www.danielsorogon.com/Webmaster/Research/NRR/Results>

After Christmas Vacation (January 5th onwards)

- Individual 2-D synthetic objects can now be generated and are available from the links above.
- Sets of varying 2-D data (images) are produced and similarity¹ measured.
- The next stage attempted to register the set of 2-D synthetic images by scanning separate horizontal lines and aligning them using one-dimensional warps. These attempts were aborted after two days.
- Subsequently, Stephen Marsland has been called in to assist with two-dimensional NRR MATLAB functions. Such functions could not be trivially located on the shared repository although such functions were definitely used². Important details and issues raised in this brief meeting have been put in a separate document:

<http://www.danielsorogon.com/Webmaster/Research/NRR/Marsland>

This document is worth having a glance at during one of the next meetings. It will potentially save wasted effort in the near future.

- The next step began on Thursday when full 2-D image registration was set to be the next goal. Having said that, profound understanding of the code (e.g. brain slice alignment) is essential first so no experiments as such have yet taken place.
- Radical change in structure of media container (JPEG, GIF and AVI files), namely:

<http://www2.cs.man.ac.uk/~schestr0>

This aims to make this container more extensible and organised so that images and clips can be fetched with little difficulty in the future.

- Addition to journals list: *Medical Image Analysis* from Elsevier Science (accessible from SwetsWise). It was included in Prof. Noble's site and it appears to include plenty of papers on registration.

¹A preliminary step is to evaluate difference using mutual information (Maes and Studholme) and MSD.

²MICCAI 2003 paper suggests this must be the case.

- Access to IJCV was very recently made available through JRULM. It was therefore added to the list journals to be regularly browsed *on-line*. All of the 11 journals initially targeted, plus the aforementioned 12th journal, are now available electronically.
- Advisor and Post-graduate Tutor roles have been swapped. Paul Beatty will be involved in the Literature Report Review Meeting and then pass on all required information to Steve Williams.
- From now onwards, miscellaneous meetings³ will be recorded at:

<http://www.danielsorogon.com/Webmaster/Research/Meetings/>

Reading

- Mainly journals, with emphasis on image registration and model-based image analysis.
- The ICPR paper (obtained from Carole Twining).
- Carole and Stephen's notes on registration, with the exclusion of overly mathematical descriptions.

Next Stage

- Discuss the results obtained in MATLAB.
- Discuss ways to progress with existing code.
- Discuss whether figures should be put in the progress reports or not⁴.
- Read the aforementioned abstract to realise necessary changes to be made.
- Review the presentation slides. One-on-one presentation will take place later to ensure it neatly fits within the time allocated.
- Have a look at the suggestions made by Stephen.
- Discuss implementation issues: C, C++, GTK/GDK, Visual Studio, MATLAB etc.

³All meetings apart from the weekly meetings with the supervisor.

⁴The current convention is to specify Web references that hold all figures and give an interactive and flexible environment.

- Meeting with Steve on Wednesday.