Faculty of Medicine, Dentistry, Nursing and Pharmacy
MEDICINE GRADUATE PROGRAMME

Thesis Meeting

Form 12: Thesis Meeting (30 Months)

Name: Roy Schestowitz   **Supervisor:** Chris Taylor

Date of meeting: March 14ᵗʰ, 2006

PROGRESS REPORT – to be filled in by the Student prior to the meeting, after consultation with the Supervisor and made available to Supervisor and Advisor prior to meeting.
(NB: This report is for the guidance of the Student in the planning of his/her thesis)

The project was set to investigate an innate relationship between two techniques, both of which have become rather fundamental in the field of computer vision. The first among these techniques is non-rigid registration, which is the method used to align two or more images into a common frame of reference, thereby annulling pose, shape, and lighting variations. This process simplifies subsequent analysis of groups of images. The latter technique is *modelling* of the appearance of imaged objects. Resultant models are used to learn groups of images, based on statistical analysis.

The aims of the project can be summarised as follows:

1. Develop a model-based algorithm for non-rigid registration
2. Conduct benchmark-type experiments, which include a variety of non-rigid registration algorithms, as well as the new model-based algorithm
3. Implement a method for building model of appearance directly from non-rigid registration algorithms
4. Devise a method for evaluating the quality of models of appearance
5. Non-rigidly register face and brain data. Evaluate the resultant models, which in turn enable assessment the quality of non-rigid registration algorithms
6. Validate the new assessment method by equating it to equivalents that are based on ground truth annotation
7. Use the new method to assess the performance of non-rigid registration algorithms
8. Extend the methods so as to make them more principled. Normalise the measures to make the method independent of any free parameter
9. Propose and implement *ad hoc* solutions for making the methodology practical in real-world applications, which often involve 3-dimensional data.

Much progress has been made and all goal were attained, apart from (8) and (9), which should be perceived as work in progress. Worrisome challenges are posed in (9), but architectural considerations could compensate for computational limitations. Rigorous group work was involved in achieving aim (5), which is a complex problem in it own right.

- **Draft outline of thesis structure** *(continue on a separate sheet if required)*: Draft to be submitted with report form, including detail of chapter headings.

See the enclosed document titled "Thesis Summary". The document contains a detailed breakdown into sections, subsections, as well as prospective content for each.

- **Timetable for thesis writing:**

- **Timetable for completion of remaining work:**
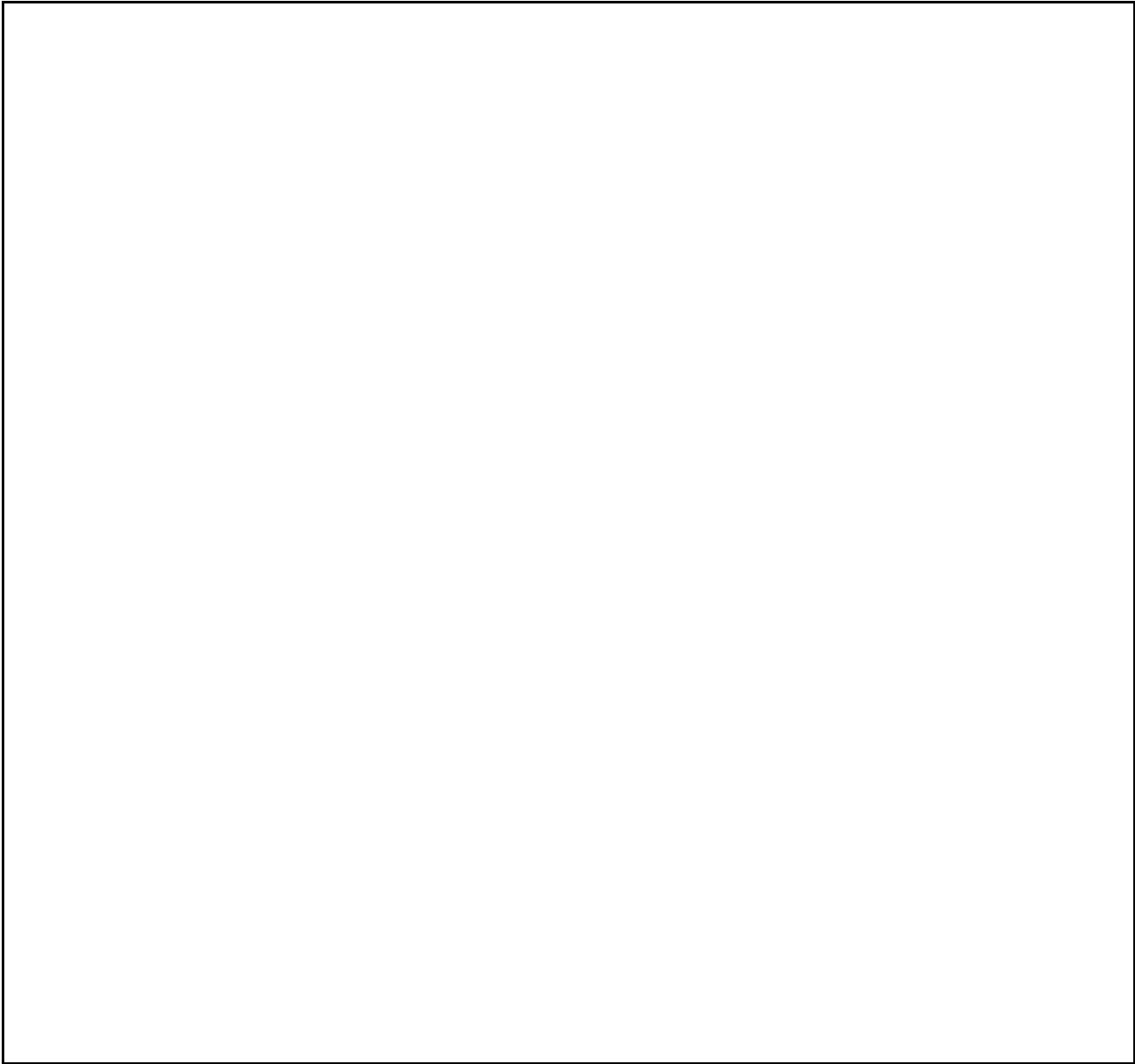
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It is also important that a record is kept of your attendance at the units listed below. Please tick accordingly. Records of attendance will be held in the Graduate Office.

Description	Attended
Workshops	
Year 3 Workshop (Your thesis and beyond)	**X**
Symposia/ Meetings	
Graduate Student Presentation or local symposia	✔
MIAS-IRC plenary meeting, Oxford	✔
MIAS-IRC plenary meeting, Manchester	✔
Seminars	
Thesis writing seminar	✔
Structure and Function plenary meeting, UCL	✔

Ph.D. Workshop	✔
EPSRC Summer School, Surrey	✔
Structure and Function workshop, Gordon Museum, London	✔
MIUA Summer School, Imperial College London	✔
MIAS-IRC plenary meeting, UCL	✔
MIAS-IRC plenary meeting, Manchester	✔
MIAS-IRC plenary meeting, UCL	✔
2nd Year Ph.D. Workshop	✔
MIAS-IRC plenary meeting, Oxford	✔
Structure and Function plenary meeting, Oxford	✔
MIAS-IRC plenary meeting, Manchester	✔
IRC-PET Meeting, Manchester	✔

Signature of Supervisor..................................…….................   **Date** ....…………

Signature of Advisor..   **Date** ....………

Declaration by Student:
I have discussed my progress with the Advisor and my Supervisor and have read and agreed with the comments made above.

Signature of Student ....   **Date** ....………

Don't forget to send a copy to the Graduate Tutor/Education Office

Photocopy or download further copies of this form when required