Intelligent & Adaptive Systems
Dissertation Project Guidelines
February 2020

- This document provides details for the Intelligent & Adaptive Systems MSc dissertation project.

- The masters project database is launched each Spring Semester. The web location and instructions on how to use it will be sent to you by email.

- General regulations for Masters dissertations can be found in the graduate handbook at http://www.sussex.ac.uk/ei/internal/forstudents/handbooks

Aim of the project

The dissertation project is considered to be the culmination of the degree. The aim is to use the knowledge and skills that you have gained so far to conduct an in-depth study on a particular problem or topic within the area of intelligent and adaptive systems. The project will include both theoretical/conceptual work and practical components such as user evaluations, data gathering, system implementation, testing and critical evaluation.

Scope and contents of the project

The expectation is that you will submit a dissertation substantially based on a ***working computer program*** in the domain of Artificial Intelligence/Intelligent, Evolutionary or Adaptive Systems. However, the program need not be an AI program: it could be a good piece of work in the area of, for example, robotics, human-machine interface, or a program to support a study of human information processing or intelligence or adaptive behaviour.

A good mark could be obtained for an excellent piece of knowledge engineering by programming at a higher level than coding in Java or some other language; for example, if the project uses a shell or software tool of some kind, not written by the student, and addresses some application area very well, working out the conceptual structure of the domain and the rules required for solving a class of problems. In exceptional cases, a design for a computer program may be acceptable, if it is very well worked out (with perhaps hand simulation).

A re-implementation of an existing AI program would be a good choice, but the dissertation should include constructive criticisms and suggest improvements. (In particular, a 'rational reconstruction' of a program which was the basis of a PhD thesis, and which took several years to write may sound difficult, but, since much of the design has already been done, it is actually an ideal project.) The credit obtained for such a project would depend on the extent to which the implementation of the original program was described in the literature and the extent to which sensible changes were made by the student.

System design and evaluation

These will typically have the following stages:

(a) requirements analysis of the selected problem;

(b) survey of previous and related approaches, including (c);

(c) literature review of theoretically related research;

(d) system design and specification;

(e) system implementation and testing;

(f) evaluation (with test data and/or users where applicable);

(g) critical analysis and discussion.

In addition, projects that involve participants e.g., users or focus groups, during development and testing will require ethical review. This process should be initiated early on so as not to delay progress. Details of the research governance process can be found at http://www.sussex.ac.uk/ei/internal/forstudents/informatics/masters/dissertations/ethicalguidelines with links to templates for obtaining participant consent. *All* projects must include a completed Self-Assessment Checklist, signed by both the student and supervisor, to demonstrate that research governance processes have been engaged with. Projects that require ethical review should also include evidence of approval having been obtained.

A project that develops a new system will probably progress through the stages above in the given order. However, real system development is normally an ongoing cyclical process. A project that re-implements an existing system may begin with its evaluation (e, f) and then explore how the design may be improved (a, b) before doing specific redesign and reimplementation (d, c), which could be followed by further evaluation.

Projects of any type will normally be expected to encompass all their respective stages (a-f). In special circumstances a project may omit a stage, with appropriate justification in the report, but then the other stages will need to show substantially greater depth and insight to compensate for the specific absence and also for the imbalance caused to the overall structure of the project and its presentation.

Supervision

You have the responsibility for planning, organizing and conducting your project work. Your project supervisor supports this process. Project supervision is typically on a one-to-one basis. By the end of the Spring Term (or before) / start of the Summer Term, students should have found a supervisor from amongst the Informatics faculty. You will be able to contact potential supervisors through the masters project database mentioned at the start of these guidelines.

Each year certain members of faculty are assigned (convened) to supervise Intelligent & Adaptive Systems projects (as indicated in the database) although faculty allocated to supervise dissertations for other courses or not convened for any course may optionally choose to supervise projects if they wish. You must have a supervisor. Both you and your supervisor should be familiar with the requirements for IS MSc dissertation content, described in this document, and the related marking criteria.

Occasionally, a supervisor may be based in another department. In such cases, or where you are unsure about your choice of supervisor, you should contact the IAS MSc Course Convenor for further guidance.

Projects in collaboration with commercial/industrial/charitable organizations are not only permitted but are encouraged. You may either organise your own external project (it would be sensible to discuss this with your Course Convenor) or find one of the industrial projects listed in the database. Where you choose to carry out an industry-linked project, perhaps with an industrial 'supervisor', you will also be entitled and required to have an academic supervisor to oversee the academic content of your dissertation. If you decide to carry out your dissertation with an outside body you must clear this with your internal academic supervisor right from the start (before the end of the Spring Term).

If, for any reason, you or your supervisor are unsure about the suitability of your proposed project for an IAS Dissertation, you should contact the IAS MSc Course Convenor for further guidance.

Your supervisor is expected to devote about half an hour per fortnight to support you doing the project (including reading outlines). How you use this time is up to you to arrange with your supervisor: you may wish to set up regular meetings, or you may have longer meetings on an as-needed basis.

Note that failure to seek adequate supervision is one of the main reasons for low grades on the dissertation. It is up to you to ensure that you make good use of the supervision time available. Over the summer period your supervisor is likely to be away at conferences and on leave. You should find out when and plan accordingly. Give your supervisor reasonable notice when arranging a meeting or when submitting material for comment.

Finding a supervisor

There are two main ways to find a supervisor.

a) Use the Informatics masters project database: this lists available supervisors and their project proposals, reflecting their research interests. The database typically becomes ready for use in April each year. The masters project co-ordinator will announce the web address and provide further instructions at the appropriate time, including details of deadlines for finding a supervisor.

(b) You may approach potential supervisors directly with your own project ideas. The research pages of faculty may help you find someone with an interest in the general area who may help you refine the proposal. Send them an email with a brief outline of the idea. If the supervisor agrees to taken on your project, the arrangement must be entered into the database (as will be detailed in the database announcement email).

Find a supervisor by the start of the Summer Term.

Intelligent Systems Dissertation Project Guidelines

Timetable

The table below provides deadlines for various project activities.

The deadlines for dissertation write-up and submission activities are firm deadlines (these are indicated with a '*' in the table). Deadlines for main project stages are deliberately vague as these will depend on the nature of the chosen topic; they should be discussed with your supervisor and realistic deadlines set for their completion. Revise your plan as the demands of your project become clearer. There is further info on expectations at each project stage at
http://www.sussex.ac.uk/ei/internal/forstudents/informatics/masters/dissertations/dissertationtimetable

Official University week numbers, as shown on Sussex Direct teaching timetables, are used where relevant. Masters students work through the 'vacation' and assessment periods until the submission deadline. You are advised to start your project as early as possible – *do not delay until all assessments are completed in assessment block 2*.

Activity	Full-time Students	Part-time Students
Project database opens…	Spring Week 3	**YR1**: Spring Week 3
Supervisor found and topic agreed	Spring Week 3-9	YR1: Spring Week 3-9
*Deadline to register project title and supervisor in masters project database	Week 10	YR1: Week 10
Produce project description and discuss plan of work with supervisor	1-2 weeks after acceptance by your supervisor.	YR1: 2-4 weeks after acceptance by your supervisor.
Proceed with main stages of project – start work asap – *do not postpone project work until after exams*	From date project accepted to dissertation submission date.	From date project accepted to dissertation submission date.
* Produce draft survey of relevant work and requirements specification (or equivalent). Draw up a draft table of contents for the dissertation and discuss it with your supervisor. Use this to plan a poster.	End of May	YR1: End of June
*Produce a detailed summary of the dissertation (*e.g.* section headings, sub-headings, main points; about 1000 words in total). Discuss it with your supervisor.	Mid June	YR2: Early May
Produce a poster and present at the poster exhibition – details to be announced.	End June	**YR2**: End June
Submit a draft of the dissertation to your supervisor for feedback.	Mid July	YR2: Early June
Finalise coding, testing, evaluation. Begin write-up.	Early August	YR2: Early July
Discuss detailed points of interpretation with supervisor and revise dissertation.	Mid August	YR2: Early August
*SUBMIT DISSERTATION Submit **two** bound copies of the dissertation to the Engineering and Informatics School Office. Upload electronic copy of dissertation and code etc. to Canvas.	**Summer Vacation Assessment Period 2020** Deadline on Sussex Direct	**YR2: Summer Vacation Assessment Period *2021*** *Check Sussex Direct timetable.*

Assessment and marking criteria

The dissertation constitutes one third of the marks of the degree. Please consult the marking criteria at http://www.sussex.ac.uk/ei/internal/forstudents/informatics/masters/dissertations/markingcriteriamscis for further information.

IMPORTANT: Plagiarism, collusion and fabrication of results are serious academic offences. Ensure that you are familiar with the official regulations concerning them. The general postgraduate assessment handbook (section 7.1) states:

> **(ii) Plagiarism.** Plagiarism is the use, without acknowledgement, of the intellectual work of other people, and the act of representing the ideas or discoveries of another as one's own in written work submitted for assessment. To copy sentences, phrases or even striking expressions without acknowledgement of the source (either by inadequate citation or failure to indicate verbatim quotations), is plagiarism; to paraphrase without acknowledgement is likewise plagiarism. Where such copying or paraphrase has occurred the mere mention of the source in the bibliography shall not be deemed sufficient acknowledgement; each such instance must be referred specifically to its source. Verbatim quotations must be either in inverted commas, or indented, and directly acknowledged.

Use a standard scheme for citations in your text and for your list of references. Consult your project supervisor if you need guidance on how to cite sources and format references and use the resources available via the Skills Hub at http://www.sussex.ac.uk/skillshub/ .

Professional writing and presentation standards will be expected in matters of punctuation, vocabulary choice, standard English grammar, use of tables, figures and the like. The normal conventions of academic discourse apply: discuss this with your supervisor if you are not sure what this means.

Submission date, dissertation length and format

See http://www.sussex.ac.uk/ei/internal/forstudents/informatics/masters/dissertations for requirements for the dissertation. In particular, please note, the dissertation should be no longer than 12,000 words including any quotations in the text, but excluding the abstract, footnotes, tables and their captions, the bibliography/references and appendices. All extensive listings of data, materials, etc. should be included as appendices. Program code should also be uploaded electronically via Canvas and/or on a CD, or similar media, attached to each copy of the dissertation. Dissertations over the word limit will be penalised because they will fail to meet the specified assessment requirements and on the grounds that they do not satisfy the given communicative task.

Students should use their own judgment when deciding how to structure their dissertations and discuss this with their supervisor. Different formats will suit alternative types of study. However, an illustration of the format for a typical Intelligent & Adaptive Systems dissertation is provided overleaf. Students should also consult the marking criteria for expectations regarding content.

Suggested dissertation report structure

- **Title**

- **Abstract**

- **Acknowledgements**

- **Table of Contents**

- **Introduction:** Outline of problem and its context, the overall aim and approach and a summary of the contents of the other chapters.

- **Background:** Discussion of the deeper context of the problem, previous solutions, and a review of the relevant literature.

- **Design of study:** Rationale, methodology and execution. Include justifications of the choice of design process and evaluation methodology.

- **Middle sections** (with appropriate headings): These may include accounts of system requirements, system design, system from the user perspective, system from the designer's perspective, system from the implementer's perspective, overview of implementation. To illustrate how your system works (especially the interface) describe a scenario of how the user(s) would use it. Provide samples of code, screen displays, user interactions, and collated data from evaluations, as appropriate. (However, the main bulk of these should be put into appendices.)

- **Testing:** Assessment that system achieves requirements as previously specified.

- **Evaluation of the system:** How this was done and the outcomes.

- **Discussion:** Implications, consequences and limitations of the investigation. As appropriate include recommendations for follow up work. A good critical evaluation of the work carried out, its merits, its limitations, and what was learned as a consequence, is the mark of good academic work and should not be viewed as undermining its value and contribution to knowledge.

- **Conclusions:** Briefly summarising and rounding things off.

- **References**

- **Appendices**

Research Governance: Where your study also involves human participants e.g. focus groups for requirements capture, user testing, etc., you should also describe this process in your requirements capture and/or evaluation, discussion sections accordingly. Include in your appendices your instructions to participants, example consent form, as well as materials used, such as questionnaires or lo-fi prototypes. It is not necessary to include all your gathered data (this is best summarized in tables in your main text); however, you may wish to attach particularly illustrative examples, where pertinent. Please ensure you **do not identify any individuals by name** in your dissertation (including appendices), to preserve anonymity. Also, separate consent must be obtained where photographs of users, etc., appear in the dissertation or appendices.

All projects *must* include a Self-Assessment Checklist, signed by both student and supervisor, to demonstrate ethical compliance processes have been engaged with.