

Guidelines for MSc Data Science

MS4T01 MSc Data Science Project

2018/19

School of Computing & Mathematics
University of South Wales
Prifysgol De Cymru

Project Organisers: Penny Holborn & Filippo Cavallari
J420, 01443 654370, Penny.Holborn@southwales.ac.uk
J418, 01443 484510, Filippo.Cavallari@southwales.ac.uk

1 Introduction

The project provides you with an opportunity to study a topic of your own choice and interest, and to demonstrate your powers of creativity, originality, investigation, analysis, reasoning, criticism, time management, presentation, and writing, as well as other skills.

The project comprises of two main tasks:

1. Investigate an area of Data Science
2. Report on your work

You are assessed on your reporting of the work, mainly through the project report, but also through the project presentation. This means that both tasks are essential. A brilliant investigation with no report will score poorly; a dazzlingly stylish report with no content will score equally poorly. Successful projects will be the result of students working steadily throughout the project, allocating their time well to both tasks. In particular, do not under-estimate the time required to write-up well. Although you may be able to write a first draft quite quickly, the quality of the report comes about through repeatedly revising and improving the document.

The project is a 60 credit module, so your commitment to the project should be equivalent to three of any of the other conventionally taught modules in your course. You are strongly encouraged to read around your project subject through suitable books and journals. Two assessors will initially assess your project, this being your first and second supervisor. The project together with the assessors' reports will then be viewed by a panel of staff who will decide its grade.

1.1 Important Dates for 2018/19

These are the key dates for your project:

Electronic Report deadline: 11:59pm, Tuesday, 17th September 2019.

Softbound Report deadline: 5pm, Friday, 20th September 2019.

Electronic Presentation deadline: 5pm, Tuesday, 24th September 2019.

Presentation day: 1pm-4pm, Wednesday, 25th September 2019.

1.2 General Aims

The MSc project aims:

- To provide the opportunity for students to employ autonomy and originality in the application of their data science and research skills to a complex problem. To provide an opportunity for the student to investigate a relevant, real world application of their skills.
- To produce a justified solution to a significant problem that is informed by a critical review of research. To further develop the student's investigative, research, writing and presentation skills as a self-directed, autonomous learner.

1.3 Implementation

- Two members of staff will supervise you. You will meet regularly with your supervisors at an agreed time. The supervisor will act as your personal tutor for advice, difficulties, job references, etc ... Please make sure the meeting becomes a regular event. If for some reason you cannot make a meeting then arrange another in its place.
- You must agree, with your supervisors, a project plan scheduling the aims/objectives of the work, the main stages involved, coupled with a definite timetable of realistic target dates for the completion of each stage. Some indication of contingency plans should be included.
- It is important to keep a log or diary of the weekly project activity. Your supervisor should keep a record of each week's aims and achievements in a log book which can be found in your shared project folder.

1.4 Presentation

- Presentations will take place on Wednesday 25th September 2019. The audience will consist of fellow students, the course team and project sponsors. Further details of the presentation timetable will be placed on blackboard closer to the deadline.
- Each presentation will be allowed a maximum of 15 minutes, followed by 5 minutes of questions from the audience.

1.5 Report Documentation

- It is important that you discuss the general structure and nature of your written report with your supervisors. Please bear in mind the points in the Written Report Guidelines.
- An electronic version of the report needs to be submitted via Turnitin by 11:59pm Tuesday 17th September 2019. A late project will be capped inline with the universities regulations.

- One softbound copy of the report should be submitted to Penny Holborn by 5pm Friday 20th September 2019.
- In producing your report the cost will be borne by yourselves. Binding facilities may be available from the University's print room. This facility can get busy, so do not leave your binding until the last minute.

1.6 References

Useful texts on giving presentations and report writing are:

- Becker, L. and Van Emden J. (2010), *Presentation Skills for Students*. 2nd edn. London: Palgrave MacMillan.
- Forsyth P. (2013) *How to Write Reports and Proposals*. 3rd edn. London: Kogan-Page.
- Turk, C. and Kirkman, J. (1988) *Effective Writing*. 2nd edn. London: E & FN Spon.
- Weyers, J. and Mc Millan, K. (2011) *How to Write Dissertations & Project Reports*. 2nd edn. Essex: Prentice Hall.
- Ward, R.A. (1977) *100% Report Writing*. Surrey: R & H Ward Systems Ltd.

Other material on presentation/report writing is available from the University Drop-in Centre, library.

1.7 Copyright

The University lays claim to the copyright of your project work. The submitted reports are the property of the University.

1.8 Plagiarism

Should you knowingly produce as your own work that which is in part or whole the work of others, without the appropriate acknowledgments, you may be charged with unfair practice and dealt with according to University Regulations.

2 Project Presentation Guidelines

The Project Presentation contributes 20% towards the final project mark and will be assessed by staff only. It is advisable to discuss your presentation content and structure with your supervisor and project sponsor. The content of your presentation must be agreed with your project sponsor to ensure sensitive information has been dealt with correctly.

Each presentation will consist of a 15 minute presentation followed by approximately 5 minutes of questions from the audience. The time slots will be strictly adhered to and students who fail to time their talk correctly may be cut off in mid-sentence. The presentation is of a formal nature and so a general level of appearance is expected.

You will be marked on your presentational skills. The structure of your talk should be as follows:

- Introduction - project background, aims, what is it about.
- Middle - what you did, how you did it, problems encountered and overcome.
- Conclusion - what has been achieved, how can the work be extended, appraisal of the success of outcomes.

In preparing your talk be selective about what you include since time is limited, but also be careful not to omit any important points. Your talk should be understandable by your fellow students. Do not try to impress by including difficult concepts that you cannot explain in relatively simple terms.

Visual aids such as PowerPoint or Beamer, handouts or even the whiteboard should be used selectively. If using PowerPoint or Beamer slides make sure they are uncluttered, and that they are structured in a logical order. When designing your talk note that a complicated slide may need 3 minutes to explain, whilst another slide may only need 30 seconds. If you decide to use PowerPoint, avoid using too many gimmicks, such as animations and sound effects. Give replies to questions simply and directly. Do not 'bluff', seek clarification or say you don't know.

When assessing presentations staff will consider the following:

- Voice - audible, too slow/fast, monotonous/varied?
- Content - relevant, creative, interesting?
- Structure - logical, clear, repetitive?
- Use of notes - read verbatim, too much dependence not used?
- Use of visual aids - clear, relevant, attractive, well explained?
- Impression - good eye contact, enthusiastic, lively, serious, humorous?

- Timing - too short/long?
- Answering questions - appropriately answered?

Marks will be allocated for structure, content, clarity and quality and suitability of any visual aids used.

3 Written Report Guidelines

3.1 General Comments

The document must be grammatically correct, clearly structured and laid out. If the assessors cannot understand from your report what you have done, not only will you score low on clarity, but on most of the other categories. The report should be

- Soft bound or Ring bound
- Single sided (typing on one page side only)
- One and a half line spacing
- 11-12pt font size
- 1 inch margins (approximately)

The report should be in one volume , with a word count of 4,800 words +/- 10%. This excludes appendices, figures and diagrams.

The nature of your report should be that of a technical report. It should not be written in a ‘what I did next’ form. At first reading the main impact of your report comes from the abstract and conclusions. Indeed, wherever possible all discussion and conclusions should be quantifiable, critical and concise; waffling or repetitive reports make bad reading and do not disguise shortcomings in form or content, be clear and concise.

References should use the Numbered reference system, or use the Harvard system, when called upon in the text, and a list of references included in a section at the end of your report. Guidance on both these referencing systems is currently available on the USW library website. Do not include a bibliography without numbering or reference from the main text. In the reference section references should be complete, that is, include details of author(s), book title/journal name, journal volume number, publisher, year, relevant page number(s), etc.

In your report pages, figures, references and equations should be sequentially numbered. Each copy of your report should contain a signed Statement of Originality to signify that the report contains only your own work. Use of other material than that which is ‘your own’ should be clearly referenced in your report. Each copy should also contain an Abstract of your project work

(about 300 words) and a contents page. The Abstract should contain a summary of your work with its aims/objectives. A full report on a partially completed project will gain more marks than a partially completed report on a fully completed project.

3.2 Structure of the Project Report

- Preliminaries (in this order):
 - Signed Statement of Originality
 - Acknowledgments
 - One page Abstract
 - Contents Page
 - List of Figures
 - List of Tables
- Introduction: why the project is interesting and/or important, what the project is about, how the report is organised.
- Background information, other work in this area.
- Chapters: investigation, approaches adopted/rejected, work undertaken, obstacles overcome or circumvented, results obtained and analysed, validation and order testing, comparison with other work etc.
- Conclusions: Main achievements, strong and weak points, technical quality of the work, quantifiable and critical appraisal and discussion of that accomplished, recommendations, possible future extensions.
- References: Complete and in order (either numbered or Harvard system).
- Appendices: Particularly large diagrams or supplementary analysis. listings.

Two staff will initially assess the project and these will be the project supervisors.

Project assessment will be based on:

- Written Report (70%) consisting of
 - Clarity (10%)
 - Background (10%)
 - Depth and Difficulty (20%)
 - Understanding (20%)
 - Results and Implementation (10%)
- Engagement and Independence (10%)
- Presentation (20%)

For Engagement and Independence, marks will only be allocated by your first supervisor for effort, initiative, and ability to overcome difficulties, time management, lateral thinking and critical analysis.

In the event of a significant discrepancy between the initial assessors an additional assessor will be asked to examine the report.

A Project Panel will be convened to moderate all project marks. Its purpose is to:

- Resolve any discrepancies between the two assessors;
- Ensure consistency and quality across the Subject;
- Ensure the appropriate grade point has been awarded;
- Examine borderline cases between grades;
- Establish a suitable ranking order;
- Identify projects to be sent to the Subject External Examiner.

MSc Data Science Project Marking Grid

Student Name:		Marker Name:				Overall Grade:		
Criteria	100-80	79-70	69-60	59-50	49-40	39-30	29-0	
Clarity (structure, expression, accuracy)	Distinction Publishable quality	Reads and flows well, occasional obscurities.	Easy to follow, isolated minor errors.	Easy to follow, very few errors.	Can be followed, some weaknesses.	Hard to follow, lacked proof reading.	Fail	
Background	Comprehensive with critical insightful original analysis.	Comprehensive with critical analysis and original perspective.	Thorough with commentary.	Competent	Limited but appropriate material.	Limited	Superficial.	
Depth and Difficulty (double weight)	Mainly at postgraduate research level	Elements verging on postgraduate research level	Sophisticated investigation.	Rigorous investigation.	Adequate investigation.	Superficial investigation of easy material.	Not of third year standard, restricted and inadequate.	
Understanding (double weight)	Postgraduate research level	Deep and critical understanding shown throughout.	Thorough understanding shown & employed.	Thorough understanding shown.	Key project concepts generally understood.	Some evidence of understanding.	Little or superficial understanding shown.	
Results and Implementation	Original (unanticipated) results and implementations presented.	Comprehensive results and implementations, presented and employed well.	Additional results and implementations presented.	Expected results and implementations presented.	Not all expected results and implementations presented.	Few or simple original results & implementations presented.	Seriously flawed results or no implementation.	
Engagement and Independence (SUPERVISOR TO ASSESS)	Exceptionally independent investigation.	Original and consistent student-led investigation.	Consistently student-led investigation.	Engaged well and led much of the investigation.	Engaged and made some independent contribution.	Limited engagement or heavy reliance on supervisor.	Superficial engagement or flawed approach.	
Presentation	Presentation of professional or broadcast standard.	A polished presentation that clearly explains the project's aims and achievements. No flaws.	A polished presentation with few flaws, but fails to fully explain the project's aims and achievements.	A structured presentation with a mainly clear talk and slides. Some flaws.	Difficult to follow and poorly planned talk. Most slides of poor design.	Inaudible or unclear talk. Illegible slides, etc. No clear structure and uninformative.	Clear lack of commitment to making presentation.	

Figure 1: MSc Project Marking Grid

Appendix 1: Guidelines for use of the assessment sheet

Clarity

(Structure, Expression, Accuracy)

How well the student has communicated what they have done.

Background

How well the student has explained the links of their work to that of others and the real world.

Depth and Difficulty

How difficult the subject matter is.

Understanding

How well the student has demonstrated their understanding of the material in the report.

Results and Implementation

The quality of the material the student has generated themselves.

Engagement and Independence

(Supervisor Only)

How engaged and independent the student was.

Presentation

Voice: audibility, pace and (preferably) varied tone used;

Content: relevance and creativity of material, good understanding;

Structure: measure of how logical and clear the structure is;

Use of notes: level of dependence on notes (e.g. read verbatim);

Use of visual aids: effectiveness, design and relevance of visual aids;

Impression: good eye contact, enthusiastic, lively presentation;

Timing: appropriate timing of the presentation;

Answering questions: were questions answered appropriately?

In assessing Content consideration will be given to the following. Conceptual/technical difficulty of the project, depth of work undertaken, understanding/grasp of subject, achievement, novelty; the quality of any practical implementation, interpretation of results, investigation and use of any relevant theory, new information sources; quality of discussion/conclusions and suggestions for further work.