University of Salford MANCHESTER

School of Science, Engineering & Environment

MSc Data Science

MSc PROJECT GUIDE 2020/2021

1. **Introduction**

In the taught part of your programme you have had an opportunity to study a range of subjects that will give you a good background and knowledge of a variety of techniques and skills in your discipline. The MSc Project gives you an opportunity to study an area related to your course in depth. It also enables you to demonstrate a range of transferable/key skills.

The MSc Project is a 60 credit module and takes place after the taught material has been successfully completed, over 3 months from July to September (or March to May if you started in January). The university expects you to devote a total of around 600 hours work to the project (10 hours per credit). This means that over this period you need to put in approximately 40 hours per week on your project or placement. That is, it is something that you should be doing full time.

The MSc Project work is described in a 15,000 word **Dissertation** that will discuss in depth the process that you have gone through and will show how research and theory has informed practice or has been modified or clarified by it.

You will be supported in achieving this level of independence by regular meetings with a Supervisor. Typically, formal meetings will be held once per week, with informal contact by arrangement.

2. **Project Aims and Objectives**

The module aims to provide you with an opportunity to integrate learning from the programme modules, working under the direction of an academic supervisor to carry out high-level coordinated academic and practical work on researching a suitable problem and developing, evaluating and critically assessing a robust, scalable and usable solution. The project aims to develop diverse aspects of your learning experience including:

- research skills;
- problem identification and solving skills;
- expertise in the design, development and/or application of applicable technologies and in their appropriate deployment;
- key skills, particularly in time management, communication, autonomy and initiative.

3. **Intended Learning Outcomes**

Knowledge and Understanding:

On successful completion you will be able to:

- critically evaluate and rigorously employ methods of analysis, making informed judgements on the validity of qualitative and quantitative approaches in appropriate research circumstances;
- critically and creatively define and critique research proposals at MSc dissertation level, including both methodological and ethical considerations;
- research and present a critical review of the chosen topic of study, dealing with current practice, recent work and state of the art;
- define and apply an appropriate methodology, with due consideration of legal and ethical issues arising from the project proposal;

- demonstrate a deep understanding of the issues that are relevant to the chosen topic of study, which must align with the programme on which they are enrolled, with particular emphasis on the relevance, selection, development, deployment and use of techniques and technologies;
- demonstrate a clear understanding of the organizational context into which technologies and practices are deployed, including legal and ethical aspects; and
- undertake critical evaluative appraisal and discussion and arrive at relevant conclusions.

Transferable/Key Skills

On completion you will have had the opportunity to:

- work independently, with autonomy and initiative, reflecting on decisions made;
- identify and define the information required on a given topic and use research skills to identify relevant information resources;
- manage and critically evaluate the information found and reference appropriately.

4. **Choosing a Project**

Although you cannot officially start your project work until you have passed 90 credits or more of the 1st and 2nd Semester modules, your project and Supervisor will be allocated towards the end of the 2nd Semester (or the beginning of the 2nd Semester if your programme started in January), so you will have had time to digest some of the material covered in all of the modules.

The most important factor when choosing your project is that you must find it challenging and stimulating and in a subject area that you want to learn more about. It is very hard to remain motivated throughout the duration of the project if this is not the case. The choice of project Supervisor is also very important. Your Supervisor's main role is to help you make your project as successful as possible, providing advice and mentoring, and to support when things seem to be going wrong. (The Supervisor has other formal responsibilities, which will be covered later). It is therefore very important that you have a Supervisor who is interested in your project and is someone you think you can work with.

A list of staff and their expertise/interests (as well as some sample projects previously offered) can be found in Appendix A. You should contact the members of staff whose projects interest you as quickly as possible, as they may agree to another student doing a specific project you may be interested in, or they may have met their quota. If you have an idea about a project, you are free to contact potential Supervisors to discuss your idea.

Once you and a Supervisor have agreed verbally on a project, then you must send an email to the MSc Project Coordinator, **Professor Mo Saraee** (*m.saraee@salford.ac.uk*), copied to the Supervisor, confirming their acceptance to supervise your project. Until you send this email, the Supervisor will consider that the project has not been allocated and is free to offer it to another student.

The MSc Project Coordinator will try to update the **Projects List & Allocations** file in the ***BB Learning Materials*** folder on a regular basis so that you can check that you

have been correctly allocated to your agreed Supervisor, or see the remaining quota of students for each Supervisor.

5. Risk Assessment of Projects (Compulsory)

Before starting you Project the need to complete a Risk Assessment of your Project. Risk Assessment of project work is a legal requirement, and the form that you have to complete and your supervisor has to complete is a legal document. A copy of the current **Risk Assessment Form** is available on Blackboard.

All sections on the Risk Assessment form must be completed. If there is no risk under a particular section then write NONE: do not just leave the section blank. Most CSSE students should only need to fill in pages 1-4, and, if this is the case for you, then the project is considered low risk and no other action is required. You can delete the remaining pages of the form. If you do need to fill in subsequent pages, the project is deemed to be higher risk and the forms will be passed on by the Project Coordinator to the appropriate Health, Safety and Wellbeing officer.

Please be aware that this form must be discussed with your supervisor before you complete it once you are happy that you are aware of any potential risks associated with the project. Once completed you should email it, in PDF (Portable Document Format), to your Supervisor who will forward it to the MSc Projects Coordinator.

Warning: *If you do not to complete the Risk Assessment form by* ***Friday 12th March 2021 (end of Week 24)*** *for January Starters your project will be cancelled. Once cancelled the project can only be reinstated by the Dean of School after they are convinced that you have followed the Risk Assessment procedures correctly.*

6. Ethical Approval of Projects (Compulsory)

Before starting you Project the need to seek Ethical Approval for your Project. Ethical Approval of project work is a legal requirement, and the forms that you have to complete and your Supervisor has to complete are legal documents.

The current **Science and Technology Taught Ethics Application** form can be downloaded from the project site on Blackboard.

Similarly to the risk assessment, you must discuss the contents of the Ethical Approval form and accompanying documents with your Supervisor who will advise you about completing the form, and any revisions that may be necessary later. Once you are happy that you have considered and understood the ethical implications for your project, you should complete the form electronically and email it, in PDF (Portable Document Format), to your Supervisor.

If your project involves carrying out surveys or asking questions to users, then **you will need to complete ALL SECTIONS of the Ethics Application Form, including the Checklist in Appendix 2**. The Checklist is used to ensure that all relevant documents have been included with the Ethics Application form.

In Science & Technology, taught projects/dissertations are classified as either Type 1, 2 or 3 in terms of their ethical implications. These categories are defined as follows:

Type 1: Routine project work. No further Ethical Approval required.

Type 2: Routine project work involving human or animal subjects/tissue where ethical issues have been considered and appropriately addressed. Ethical Approval will be required from both the Project Supervisor and a member of the Science & Technology Ethical Approval Panel for Taught Programmes (normally the Module Leader).

Type 3: Projects where there is a significant ethical dimension. Ethical Approval will be required from both the Project Supervisor and two members of the Science & Technology Ethical Approval Panel for Taught Programmes. This process is managed by the ***Research & Enterprise Ethical Approval Panel for Taught Programmes***.

Warning: *If you do not to complete the Ethical Approval form by **Friday 12th March 2021 (end of Week 24)** for January Starters your project will be cancelled. Once cancelled the project can only be reinstated by the Dean of School after they are convinced that you have followed the Ethical Approval procedures correctly.*

7. Ownership of Copyright

Any written material, computer programs, or other computer-based material produced as part of the project, is produced for the purpose of assessment of the student(s) by members of this and other universities (e.g. external examiners) and **the copyright is owned by the University of Salford.** The Supervisor, or other members of this university, are free to use the material as the basis of further projects or research and may publish, or otherwise disseminate, information about the project if he or she so wishes. In any publication or presentation, the contribution of the Student(s) would be properly identified and acknowledged. This could be by co-authorship, where the student contribution is a major part of the published work, or by an acknowledgement, where the contribution is a minor part.

In the event of commercial exploitation of all or part of the project work, the Student(s) would be entitled to a fair share of the profits, but the supervisor and the university would also be entitled to shares. If the project had been suggested, or contributed to, by a commercial company, they would also be entitled to a share of the profits. The allocation of shares of profits would be by negotiation, taking account the circumstances of each particular case. One consideration would be whether any further work had been done by the students, or by a company, to develop the project work into a commercial product after completion of the project.

8. Responsibilities

There are several people involved with a student's project. They have different roles and responsibilities.

Supervisor's responsibilities

The project Supervisor is your main source of advice and will:

- Arrange to meet you at a regular time each week during each semester. The length of the meeting will depend upon the stage of the project; longer meetings will probably be needed at the start of the project. In some cases, fortnightly meetings may suffice. Please note that during the summer, a Supervisor will most probably take some annual leave – you must discuss this and make arrangements in advance on how to carry on with your project during the Supervisor's absence.
- Be available for occasional, ad hoc meetings to deal with unexpected or urgent problems, subject to his or her other duties and commitments. Many supervisors will provide support via email. Some are "never" in their offices, but "always" available via the phone or email. Check with your supervisor at the start of the project!

- Suggest suitable written material to read, and other people to consult, in order for you to find the necessary information about the project.
- Ensure that the necessary software, manuals and any special hardware is available and, where necessary, negotiate on behalf of the student with the School's IT support staff and/or with the University's Digital IT for any facilities, such as extra file store, that are necessary for the project.
- 'Sign-off' your **Project Plan**, and advise you on the form, content and preparation of the **MSc Dissertation**.

The Supervisor is jointly responsible, with the Assessor, for awarding the marks for the **Dissertation**.

Assessor's responsibilities

Your project Assessor is responsible for giving an independent assessment of the project, and will be allocated once the projects and supervisors have been agreed and published on Blackboard.

The Assessor is jointly responsible, with the Supervisor, for awarding the marks for the **Dissertation**.

Coordinator's responsibilities

The MSc Project Coordinator is responsible for the general organisation of the projects. This includes:

- Producing and maintaining all the MSc Project documentation and setting the assessment deadlines;
- The allocation of students to Supervisors, if a student has failed to select a suitable project by the deadline;
- The allocation of project Assessors;
- Assigning a third marker if the Supervisor and the Assessor cannot agree on marks;
- Resolving problems that cannot be dealt with by your Supervisor.

Student's Responsibilities

You are ultimately responsible for the success of your project. To that end you must:

- Keep a **logbook** recording the periods spent working on the project, giving a description of the work carried out, progress made, problems encountered, and lessons learned, with a 'to do' list at the end. It will provide a priceless source of information when you write your **Dissertation**.
- Attend regular meetings with your Supervisor, recording in your **logbook** each meeting and the tasks and targets set to be achieved by the next meeting; allocate a sufficient amount of your time to your project work and carry out the work on a regular basis throughout the year; take your Supervisor's advice on technical matters which are within his or her competence and responsibility,
- Inform your Supervisor promptly and **honestly** of your progress and any problems encountered, so that any necessary remedial action may be taken, prepare the MSc Project deliverables to a satisfactory standard, and submit them on time,

- Take responsibility for liaising with any external clients that you have set up, give your Supervisor sufficient time to respond to any requests for advice, e.g. when writing up your **Dissertation**, or arrange approved server facilities, if your project involves a web site or web-based application.

9. Deliverables, Assessment and Important Dates

The main deliverable is the **Dissertation,** which carries all (100%) of the marks for the module.

However, you are strongly advised to prepare a **Project Plan** which should be 'signedoff' by your Supervisor before you start on the project. This should reduce the risk of any radically different expectations for the project between you and your Supervisor, and help to keep you focused on the important goals.

Similarly, you are strongly encouraged to maintain a **logbook** for your project, as it is essential to keep a record of the work you carry. The structure and contents of the **logbook** and the other project deliverables are given in the following Sections.

The key deadlines are given below and shown in Appendix B:

Activity	Deadline for January 2020 Start
MSc Project Overview and Organisational Talk (Time/ Venue to be confirmed)	Week starting 15th Feb 2021
All students must have a Supervisor/Project	22nd Feb 2021
Project Plan **agreed by Supervisor**	1st Mar 2021
Project Starts	1st Mar 2021
Submission of Risk Assessment & Ethical Approval **forms (Supervisor)**	12th Mar 2021
Submission of the Dissertation **via BB by 4.00pm** and **2 ring-bound copies of the** Dissertation **handed in to the School Office**	31st May 2021

10. Project Plan

An important part of any project is a proper plan. A plan reduces the risk of there being radically different expectations for the project between the Student and the Supervisor. It also helps to keep you focused on the important goals. A **Project Plan** must be completed and "signed-off" by the specified deadline.

The **Project Plan** should be concise enough to give an easily accessible overview, but detailed enough to cover the key aspects of the project. It will typically fit on 2-3 A4 pages and contain the following information:

- Project Title
- Student's name
- Supervisor's name
- Introduction: a short paragraph to introduce the project and describe its overall Aim(s) i.e. what you hope to achieve.
- Your key Objectives. These can be considered as what you need to do to confirm that you have achieved your Aims. Your objectives should be SMART:

  Specifi*c – states exactly what you need to achieve*

  Measurable – *includes a quality or quantity measure*

  Agreed – *between you and your Supervisor*

  Realistic – *can be challenging but must be achievable*

  Timebound – *with a clear end date or timescale*

  At the start of the project it is difficult to assess exactly what will be achieved. Consequently, it is suggested that the objectives be split into two sections, indicating the **minimum/core objectives**, which are more or less likely to be achieved, and **additional/optional ones**.
- The details of the methodology to be used to achieve the objectives
- A list of software, equipment and facilities, etc. to be used.

11. Dissertation

The **Dissertation** should describe your work, achievements and reflections on your project. It should be organised into Sections, as outlined below, and detailed information, such as program listings, that is not essential to the main ideas in the report, should be given in Appendices. Each Section should begin on a new page.

The **Mark Sheet** that will be used to assess the **Dissertation** will be available in the MSc Project module's *Mark Sheets* folder on Blackboard. This also gives more guidance as to what each section should include and the Assessment criteria and is worth reading before you prepare the **Dissertation.**

Plagiarism warning: *The rules of plagiarism are clearly stated in your Student Handbook which you must consult. You are strongly advised to take care to reference and acknowledge* ***any material*** *that is not your own work. In particular, you must make sure that:*

- *any sentences, including any definitions, that are copied word for word are in quotation marks and cite the source(s)*

- *any figures copied include citations to sources.*
- *any code that is taken from any source (text book, WWW, journals etc) is fully acknowledged.*

Remember that if you are found guilty of plagiarism then you are automatically awarded a zero mark for the module and referred to the University Disciplinary Committee. The penalty for plagiarism at Level 7 (MSc) could go well beyond this and a cap of 50% is set on other modules, which effectively makes it impossible to get anything higher than the basic MSc.

A good **Dissertation** should include the following contents, although the actual structures may depend on the specific project:

Title page (*required)*

The first page of your report should be a title page in the following form:

- The MSc programme title.
- "MSc Project Dissertation".
- The current academic year. • The title of the Dissertation.
- The name of the author of the Dissertation.
- The name of the Supervisor.

Abstract *(required)*

- What has been attempted,
- What has been achieved
- The consequences of the findings of the project.

It should be capable of standing on its own as a summary of the work, and should have a maximum of 250 words.

Acknowledgements

- Acknowledgements of any particular help/advice which you have received.

Contents

A list of section and appendix headings with page numbers.

Section 1. Introduction *(required)*

- The motivation for the project
- The aims and objectives
- The approach adopted
- A summary of the project plan

- A description of the structure of the rest of the Dissertation.

Section 2. Background *(required)*

- An in-depth investigation of the various literature sources (web sources alone are unlikely to get a good mark) and/or other similar products
- References to previous published work, and a brief description of how these are relevant
- A description of the methodology, tools, standards, languages, algorithms, and techniques that are used in the project (design and implementation projects) or the experimental methodology (investigative projects), including a rationale for making the choices.

Section 3. Specification and Design *(depends on the project)*

- Description of the requirements.
- The design of the software, web application, etc.. This should include the rationale, and justify design decisions, as well as presenting the resulting design in a suitable form. For a web application you would present the user interface design using Blueprints, Wireframes, etc. (Rosenfeld & Morville, 2002), the database design using an E-R model and the software using Use Case Diagrams, Data Flow diagrams etc; for object-oriented software you would use UML (Booch, Rumbaugh & Jacobson, 1999), etc.

Section 4. Development and Implementation *(depends on the project)*

- A description of how the designed system was implemented to meet the requirements
- A description of the main problems faced, and the solutions adopted
- A justification of the methods and tools adopted.

Section 5. Testing and Results *(depends on the project)*

- Description of the testing strategy adopted: test plan, evidence of testing with (in)valid input data and actions taken (Design and Implementation projects) or presentation of an appropriate range of experimental results (Investigative projects). If the project involves the creation of a web-based system, the testing must include: accessibility testing, validation of markup and any CSS rules, penetration testing, browser and platform independence testing, as well as functional testing.
- A full analysis of the results of the tests: discussion of the test plan and actions taken (Design and Implementation projects); an analysis of the experimental results, design of follow up experiments (Investigative projects).
- Details of user involvement with the system: any usability studies or user evaluations (Design and Implementation projects or any users involvement in the experiments (Investigative projects).

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Section 6 Critical Evaluation *(required)*

Evaluation against objectives

- A review of the plan and explanations for any deviations from it.
- Evaluation (with hindsight) of the product
- Lessons learned during the course of the project

Section 7. Conclusions *(required)*

- A review of the work done and findings compared with the state-of-the art
- Possible improvements to the product and further work, as appropriate • A reflection on any legal/social/ethical/professional issues

References *(required)*

These must be in the formats described later in this guide.

The **Dissertation** should be printed on A4 paper, single-spaced, with adequate margins and use a 12 point text font. Pages should be numbered. The length, not including Appendices, should be around 15,000 words. Excessively long **Dissertations** will be penalised. It **must** be submitted via BB in PDF (Portable Document Format). Any code should also be zipped up and included with the BB submission.

Two copies of the **Dissertation** have to be printed and should be plastic ring bound. These must be submitted to the School Office by the deadline.

Other General Style Points for the Dissertation

All sections, sub-sections, equations, figures and tables should be numbered and referenced in the text. For example "The changes made to the main template are outlined in Table 5.2" refers to the second table in Section 5. When referring to specific sections, equations, tables, chapters and figures, capital letters should be used, e.g. Section 1.1, Equation 1.1, Table 1.1, Chapter 1.1, Figure 1.1.

Each chapter should start on a new page and have a clear heading of the chapter and its title. It is helpful to start a chapter with a short introduction of what will be contained in the chapter. A short conclusions section at the end of each chapter also helps readers follow the Dissertation.

Use a spell checker. References and citations should use the **Harvard** style

If you have had little practice in writing, you are strongly advised to consult a good text on report writing, e.g. the books by Davis (2001) and Dawson (2005).

References and Citations

At this final stage of your courses, you will be aware of the importance of appropriate referencing to acknowledge use of other work, demonstrate familiarity with standard texts, show how your work relates to others, demonstrate that you have read around the subject, direct the reader to further reading, etc.

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References

The list of references should be listed in alphabetic author order. The format of individual references depends on whether it is a book, journal, a paper in a conference

or workshop, or on the web. The following illustrates the format for each category: **Books**

Sommerville, I. (1989), Software Engineering, Addison Wesley, Wokingham, UK.

Journal Papers

Strosnider, J. and Paul, C. (1994), 'A structured view of real time problem solving', AI Magazine, pp. 45-66.

Papers in Conference Proceedings or Edited collections

Dean, T. and Kanazawa, K. (1988), Probabilistic temporal reasoning, in M. Kaufmann,ed., 'Proceedings of the Seventh National Conference on Artificial Intelligence', AAAI, U.S.A.,

Web pages

For Web pages, you include the year of publication or revision in parenthesis immediately after the author name, and the date of access at the end in square brackets.

Vadera, S. (2000), AI Module Page, www.cs.salford.ac.uk/aimodule/ai.nsf, [2 January 2001].

Citations

When citing references in the body of the **Dissertation**, the authors, year and if appropriate page number, should be included in parenthesis. Where there are more than two authors, "et al". should be used after the first author.

The following three examples illustrate the format:

Software prototyping is expensive if the prototype is implemented using the same tools and to the same standards as the final system (Sommerville, 1989, p116). Temporal constraints pose a significant problem for the development of real-time systems (Dean and Kanazawa, 1988).

The introduction of types in Prolog offers several advantages (Neves et al., 1986).

When a reference is used as a noun, the name of the author should be followed by the year of the publication. For example:

In their seminal work on AI, Newell and Simon (1976) introduced the physical symbol system hypothesis. This hypothesis ...

For WWW pages, you should use a similar style. For example: Vadera (2000) contains the module ....

12. Extensions

No extension is possible to your MSc programme and correspondingly to your project. **You must submit your Dissertation by the deadline of 30th September for September starters or 31st May for January starters**.

13. Reassessments and Resubmission Information

If you, by the end of the taught modules stage, have obtained **90 Credits or more**, then you shall be permitted to progress to the project stage. The regulations allow you to proceed to the project whilst trailing one module.

If you are permitted to progress to the project stage following reassessments then all dates given in this document are set back three months to allow for the period taken up by doing the reassessments.

It may be the case that a student does not complete a project and a/or submit a **Dissertation** of the required standard. Usually, in this case, they will be given an opportunity to resubmit the Dissertation. If this happens you need to contact your Supervisor to find out what you need to do to pass. In particular, you need to discover whether additional work must be completed before the **Dissertation** is rewritten. The maximum mark you can achieve after the resubmission is 50%, unless a successful PMC form has been completed.

Appendix A – Staff expertise/interests and sample of previously offered projects

Ian Drumm – *Acoustics, Visualisation, Mobile Computing*

- Rendering aligned visuals and audio for virtual environments. The project offers a student with very strong programming skills a chance to utilise state of the art virtual environment facilities (the Octave) to render and assess coincident visuals and audio. This will likely involve linking visual rendering software developed with Unity or XNA with an in-house developed API / or externally developed aural rendering application for 3D sound (Ambisonics or Wavefield Synthesis). The student will be primarily developing in C# and using UDP or TCP/IP to link visual and audio applications. The student can hence subjectively assess localisation, immersion and presence with respect to the spatial and temporal alignment of visual and audio cues.
- Assessing the presentation of 3D content for domestic environments. State of the art domestic entertainment systems offer High-Def visuals, 3D sound and haptic control with technologies such as Kinect. The capabilities and limitations of such systems raise interesting questions about immersion and presence, for example how well do we cognitively align 3D sound presented together with visuals presented on a flat 2D screen. The project offers a student with strong programming skills a chance to utilise a state of the art sound system in a domestic style environment (the listening room) to assess immersion. This will likely involve linking visual content for a flat screen with aural rendering application software for 3D sound (Ambisonics or Wavefield Synthesis).
- Developing applications for sound synthesis. The project offers a student with strong programming skills and a good mathematical background a chance to implement and assess digital sound synthesis techniques of choice. As well as its application in music, digital sound synthesis also features in state of the art gaming and simulation. For example, Granular sound synthesis or physical modelling sound synthesis can emulate sounds in virtual environments, where the sound sources are affected by that environment.

Lee Griffiths – *HCI, Social Media, Mobile Computing*

Norman Murray – *Interactive Graphics, Games Programming*

- GUI interface to Google Query. This will involve the development of a direct manipulation visual query language to construct queries to Google as opposed to typing into a textbox. It will take advantage of the advanced query options that are available when creating a textual query to Google.
- Kinect camera for desktop 3D interaction. Examine the use of the Kinect camera for interaction in a 3D environment. Using the Kinect camera the upper body, (head, arms and torso) can be tracked. You will examine how this can be used for interaction – selecting and manipulating objects, navigating the environment and controlling the environment. This would involve creating a 3D world and visualising the users arms within the environment and utilising them for control of the environment.

Extraction and Intelligent Systems

Judita Preiss – *Natural Language Processing, Text Mining, Data Mining, Big Data*
[Does not supervise projects in 2018-2019]

- Knowledge extraction and hidden knowledge detection from text (often applied in biomedicine) - simple inferences can often lead to a computer 'connecting the dots', i.e. coming up with a connection that people have not yet spotted. Application of this approach to friend networks can show up unobserved links between people. Or application to lists of references can show connections between fields that went unnoticed. This approach is also useful in the manual creation of knowledge bases, as computers can suggest information that should perhaps be included but has been omitted.
- Synonym detection is a fundamental part of natural language processing - synonyms provide links in text, and, while we (in many cases) easily infer synonymy, a computer treats each term separately. For example, in most publications, "Raynauds disease" and "Raynauds phenomenon" are synonymous, however they are not treated as such by a computer.
- Horizon scanning allows us to observe emerging trends, a very desirable feature with many different application avenues: defence, news, fashion, medicine (epidemic spreading), companies... Many sources can be mined for this information: Twitter often providing a very good source of current 'goings on'.
- Sentiment classification from Twitter feeds allows companies to spot the overall opinion of their customers. This can supply them with information of areas of improvement, or any particular issues (for example a rail company can detect unrest at a particular station, implying that perhaps there's a problem there with delays).