

Foundations of Computer Science 2

Project Specification AY19/20 Semester 2 (60%)

You are asked to choose a significant topic in Computer Science and write a 4000-4500 word report (in pdf format), and a poster (ppt or pdf format) discussing this topic, including the current state of the practice in this area and/or the impact this topic has had/is having in Computer Science or in a broader context along with an in-depth discussion of the topic. It must be clearly highlighted using name and ID number which parts of the report are generated by whom. This main body of the report will be marked on an individual basis (as far as is possible). A summary/abstract, introduction, conclusion and list of references (and bibliography) should also be included in your report.

Your project topic choice must be approved by me. Some possible topics are included below. **Each topic can be chosen by at most two groups. Please add your topic choice to the google spreadsheet. You cannot choose a project without adding your team details to the spreadsheet. Also check the spreadsheet to determine if the topic has already been chosen by two groups. One team member must also email me with the topic title to secure that topic. I will revert asap with approval or otherwise.**

The report must be written in a formal academic format where views/claims/statements are supported by appropriate references. These references must be to peer-reviewed published academic articles or published books (websites are not peer-reviewed and thus should be used to a very limited extent for information/referencing). There are many electronic resources available on the library website. Please also read the 'Cite-it-Right' booklet from the library guiding you through the process of referencing correctly. Please also note that text copied exactly from another source must be treated as a quotation and thus placed in quotation marks. Otherwise such copying of text will be considered inappropriate and treated as plagiarism. All submitted projects will be passed through a plagiarism detector. Within this module plagiarism will result in an 'F'-grade in the module. In addition, normal University penalties will apply for plagiarism.

The project must be completed as part of a team, normally of four students.

Your team member names and id numbers must be posted on the Google spreadsheet previously circulated on Sulis announcements. Please do not edit existing text in the spreadsheet and please add team details (name and ID number) to columns B and C.

You must set up a github project (see github.com, a version management, project management and collaboration tool) and make it accessible to me from the outset (My details: email: michael.english@ul.ie; username: bleisce). All documents must be stored on github and all changes must be viewable. Part of the project marks will be allocated for this github project and for the team contributions, timing of these contributions, evidence of collaboration etc... The report and poster created must include (at the start of the report) hyperlinks to the github repository and any other web-based documents created as part of the

You must create a project plan with tasks, owners of these tasks, delivery dates and sign-off (which requires the initials of two other team members). You can do this in a simple spreadsheet or using an online specialised tool. If possible you must add this document to your github repository.

Each student will be asked to email me separately a document outlining their view of the contribution of each team member to the project.

Please note that projects that receive high marks will:

1. assimilate knowledge from existing reputable sources;
2. be informative (and thus not just based on your current knowledge);
3. be clear, concise, well-structured and well-written
4. have regular contributions to github (and thus not be a last minute effort)
5. have a project plan that is meaningful and kept up to date with any changes to deliverables etc..
6. use appropriate referencing etc.. (see cite-it-right from UL library), including the use of reference management tools (and providing evidence of same).
7. Provide evidence of learning in the context of the subject area and the tools adopted and utilised
8. follow all guidelines given here and elsewhere
9. be the result of good teamwork.

The report and poster must be submitted to Sulis, under 'Assignments' by 7th May at 18h00. Each project must only be submitted by one team member (the member listed first on the google spreadsheet). A screenshot should be taken of the Sulis screen that confirms successful submission and should be emailed to me and to all other team members, thus ensuring there will be no confusion about project submission.

Sample Project Topics:

1. AI
2. Robotics
3. Machine Learning
4. Big Data Analytics
5. Computer Assisted Education
6. Cyber Security
7. Natural Language Processing
8. Cryptography
9. Network Analysis (for Social Networks)
10. Human Computer Interaction
11. Virtual Reality
12. Augmented Reality
13. Internet of Things
14. Automatic Speech Recognition
15. Quantum Computing
16. Safety Critical Software
17. Historical Developments in Computer Science
18. Design and Development of Programming Languages
19. Data Structures in Computer Science
20. Verification and Validation of Software

Brief Notes on research and bibliography management (these may be extended over the coming week)

1. Please use the library website to search for e-books, journals, conferences
2. Please follow the 'cite-it right' from library for referencing
3. You could use Endnote (if you have it), or (maybe simpler) an online tool such as Mendeley or Zotero for managing your references
4. Google Scholar (scholar.google.com) is also a good place to find useful books, journal articles etc... Note: you may have to go back to UL library to get access to these documents as they are part of collections which are subscription based but the library had paid-up subscriptions to many collections...

Suppose you find an interesting article on Google Scholar and suppose it was published in 2015. Note that one of the links under the article says something like: 'Cited by 678'. This means that this article has been cited by 678 other published articles since 2015. The higher the number of times an article is cited reflects a level of quality/importance associated with the article. Obviously, articles published recently may not have been cited that much (not enough time since publication to cite it in a new article). Seminal articles and books in a field will have a large number of citations to them. Also articles on very specific topics may have a smaller number of citations to them since they were published.