Department of
Computer Science

UNIVERSITY OF BATH

CM30082 Individual Project
Literature, Technology and Data Survey Specification

Submission Deadline	8 PM Fri 2 December 2022
Submission Location	Moodle
Proportion of Unit Assessment	*Formative assessment*
Learning Objectives	To understand the process of literature, technology and data surveys. To define and conduct a literature search. To manage information obtained during a literature search. To understand how to conduct critical evaluation and write a literature review. To enhance skills in report writing.
Feedback provided	Feedback via Moodle or during discussion with supervisor.

Problem Description

Background

In conducting any computing project, whether for this unit or within the development of new software in a commercial environment, it is vital that the development is grounded in a sound understanding of the problem domain and previous work in the project area. It is rightly said that any academic must acknowledge that their work, no matter how novel, is "standing on the shoulders of giants" (Bernard of Chartres, d. 1125) - those who have gone before to provide the foundation of theory and practice we use today. The Literature, Technology and Data Survey provides vital direction for the project, and prevents unnecessary repetition of previous mistakes and unwanted re-invention of available designs, algorithms, techniques, code and data libraries and applications.

Within the final-year Computer Science project, background reading is very important. It demonstrates your ability to learn independently, apply research skills, and critically evaluate the work of others. It also ensures that your final-year project produces a product of worth - a product that builds upon current knowledge and techniques. In assessing a project, the quality of the investigative work of a critical Literature, Technology and Data Survey is a key factor in the difference between a first class or second class project.

Guidance

The work of a Literature, Technology and Data Survey consists of two parts - a (Literature, Technology and Data) Search and a (Literature, Technology and Data) Review. In the Search phase, you will (with the guidance of your supervisor) identify appropriate previous work, locate the appropriate papers/articles/books/technologies/data, read the literature and make notes on the key ideas, theories, directions, concepts and techniques that are revealed. Part of the problem of conducting the Search is bounding it - identifying material which is beyond the bounds of the project no matter how interesting the material is. A complementary aspect is the ability to identify when your material is insufficient. It is easy to become frustrated with the

difficulty of locating appropriate references, and the temptation is to then become satisfied with a less than adequate coverage of the relevant literature and technology. A key factor in marking the Survey is whether key foundational material has been considered. Therefore, you should not be tempted to cut corners.

In the Review phase you will have to order and digest the material you have read, and then produce a structured summary and critique of the reading you have done. The aim of the Review is *not* to systematically catalogue the reading you have done. Rather, using the hypothesis you have developed or the project idea you have identified, you should use the reading to identify the major ideas and threads of development, relate work that has (perhaps) not previously been related, and thereby justify and refine your hypothesis and ideas. The Review should "tell a story" that identifies the development and blossoming of your ideas as you conducted your literature and technology search. It is worth repeating that it should not be merely a catalogue of the items you have read.

The precise form of literature and technology you will need to examine will vary depending upon the nature of your project. Highly research-related projects will invariably tend to draw upon a range of published papers from academic journals or conference proceedings, perhaps utilising a few key texts. The Literature, Technology and Data Survey will start with an identification of the problem area and will use the Review to identify previous work completed in the area and the major results. It will, of necessity, have to pull together a lot of small findings to paint a picture of the recent progress made within the area. It will lead towards an identification of key open questions that relate to your hypotheses and will highlight the evidence that your hypotheses are based upon. The Survey will normally culminate in the presentation of your hypothesis and an identification of the contributions to knowledge that you hope your work will make.

If you have chosen a project that focuses on the development of a software product, your Survey will also begin with an identification of the problem area. It will then discuss your investigation into currently available software that tackles the same or similar problems, and the lessons that can be learnt from the way in which the problem has previously been tackled. It will also investigate possible technology and implementation alternatives, using books and computer magazines or journal articles to discuss the trade-offs with each approach. It will contain a critique of the approaches and will naturally lead to a set of conclusions on the approaches that should be considered. The temptation with software development projects is to only focus on one or two textbooks for all the information you require. Whilst it may be the case that a textbook provides a lot of the information you require, this is not satisfactory for a Survey. Rather, you should consult a wide variety of related texts to consider the different approaches that are advocated. You should make the effort to find journals that identify the latest developments in the technology areas related to your project. You should scour the Internet for new developments in the area. Even the simplest database-related or web-based project actually presents a host of opportunities for consideration of new approaches.

If you have a project which is part research and part software development, your Survey should reflect this.

Conditions

This is an *individual* assessment - you must work on your own, with the advice of your Project Supervisor, to complete this coursework. As with all assessment, this coursework is subject to the University regulations on plagiarism, a summary of which can be found in the Assessment chapter of the Computer Science Undergraduate Programmes Handbook.

Deliverables

You must hand in a written Literature, Technology and Data Survey, which will eventually become a chapter of your Dissertation. Although there is no constraint upon size, you should be aware that the Project Dissertation is limited to 10,000 words. Thus, around 3,000 words is

normally appropriate. A consistent style should be used throughout. The Word and LaTeX templates provided should be a good start.

Marking Approach

This coursework is formative - it does not contribute to the assessment of the unit. However, you must have completed a satisfactory Literature and Technology Survey. The following is a guide to the standards expected to achieve the corresponding classification:

1st Class   The Survey satisfies all the requirements of a 2:1 student, but in addition, demonstrates a spirit of critical evaluation throughout. The Survey helpfully gathers together many disparate sources of information into a coherent whole, presenting a well-structured argument that makes steady progress toward clear conclusions. The Search is expansive and yet well-focused, with a clear effort made to select the level of detail and the reading material that is included. All references, quotations, illustrations and results used are appropriate and selective so as to enhance rather than disrupt the flow of the writing. The writing style is professional, lucid yet compact, consistent and correct throughout.

2:1   The Review starts from the main project ideas and elaborates upon the ideas using key texts. A firm foundation of historical development is provided, and the review moves rapidly on to recent developments. Key ideas are drawn from many sources and are described in an appropriate level of detail. Comparisons between approaches and results are made and a good attempt is made to identify relevant open questions. The reading is applied to the project ideas and leads to natural and well-justified conclusions. References, quotations, illustrations and results are carefully selected and applied in context to reinforce key points. All sources are appropriately referenced throughout, and a well-constructed and accurate bibliography is supplied. The writing style is professional, consistent, clear and correct throughout.

2:2   The Search considers the key texts and starts to examine additional related material. The Review has a sense of progression toward key conclusions. The conclusions are well drawn out, but there is a general lack of critique as the discussion progresses. References and carefully selected quotations, illustrations or results are used to illustrate key points, and the bibliography is well constructed, although perhaps containing a few errors in style or content. The writing style shows some lack of care or does not achieve professional standards (shows a lack of care over tense, person or number).

3rd Class   The Search is poorly conducted, consisting mainly of a few readily available or "key" textbooks. The Review is a poorly organised catalogue of the reading that fails to draw out key themes or directions. The Review is difficult to read and does not "draw" the reader toward a natural conclusion. Poor use is made of references to the text, and the bibliography is poorly constructed or not constructed according to a recognised system. The writing style is weak, with occasional evidence of lack of care over sentence construction, grammar or spelling and an obvious need for additional proofreading.

Feedback

Feedback will be provided via Moodle, or will be verbal during one of your supervisory meetings. You can discuss the literature survey with your supervisor during one of your regular meetings to obtain further feedback. Feedback will be available within three semester weeks of submission.