RESEARCH JOURNAL — COMPUTING

Version 4.0
Computing
COMP110

Dr Ed Powley

Introduction

In this assignment, you will produce a journal detailing your research on the principles of computing. Your research will focus on a seminal paper in computing, exploring the historical context of the paper and its lasting influence on the field.

Familiarity with the scientific literature is extremely helpful for the computing professional, both to understand the seminal works that lay the foundations of the field, and to keep abreast of recent developments at the cutting edge. Games technology is a fast-moving field, and keeping up is important. However scientific papers are written in a way that is sometimes daunting to newcomers, so it is essential to practice the skill of reading and comprehending such papers. Keeping a research journal is a useful way to record your thoughts (questions, hypotheses, connections, ideas, ...) as you explore the literature.

"Computer science is not about machines, in the same way that astronomy is not about telescopes. There is an essential unity of mathematics and computer science."

— Michael R. Fellows

"The purpose of education is to destroy your confidence in your own knowledge so you will just continuously research and read and double-check and maybe someday claw your way toward a slightly more accurate understanding of the world."

— Katie Mack

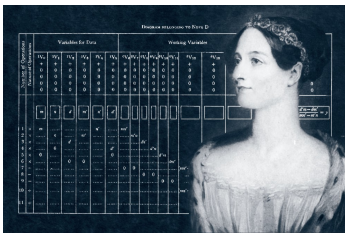
This assignment is formed of several parts:

(A) **Write** a draft research journal, of at most 1500 words, that will:
  (i) **summarise** the key contributions of **one** of the papers on the reading list linked below;
  (ii) **discuss** the context and influence of your chosen paper, with reference to other papers from the scientific literature;
  (iii) **list** the papers referenced, including the chosen paper, in the form of a correctly formatted bibliography in ACM or IEEE style.

(B) **Deliver** a brief (maximum 10 minute) presentation, that will:
  (i) **summarise** the key contributions of your chosen paper;
  (ii) **outline** the context and influence of your chosen paper.

(C) **Write** the final version of your research journal, of at most 1500 words, that will:
  (i) **revise** any issues raised by your tutor and/or your peers following Part A.

(D) **Discuss** your research journal with the tutor in the timetabled viva session.



Ada Lovelace is considered by some to be the first ever programmer. Lovelace believed that intuition and imagination were critical to effectively applying mathematical and scientific concepts. She valued metaphysics as much as mathematics, viewing both as tools for exploring "the unseen worlds around us".

Assignment Setup

This assignment is an **academic writing task**. Create a copy of the following Overleaf project:

https://www.overleaf.com/read/qdnfdyphtrdt

Alternatively, fork the following repository:

https://gamesgit.falmouth.ac.uk/projects/COMP110/repos/comp110-journal/browse

Use the existing directory structure and, as required, extend this structure with sub-directories. Please also ensure that you add any editor-specific files and folders to the .gitignore file.

Part A

Part A consists of a **single formative submission**. This work is **individual** and will be assessed on a **threshold** basis.

To complete Part A, read the papers on the reading list available under this assignment on LearningSpace. Choose **one** of these papers to focus on for your research journal. Use this paper as a starting point for further reading in the scientific literature. Write a 1500 word document, typeset using LaTeX based on the provided template, which summarises your chosen paper and its influence on the field of computing with reference to the other papers you have read. Your report must include a bibliography of all works cited; it is recommended that you typeset this using BibTeX as in the provided template.

Bring a draft of your research journal to the timetabled review session, where it will be reviewed by your peers.

You will receive **immediate informal feedback**.

Part B

Part B consists of a **single formative submission**. This work is **individual** and will be assessed on a **threshold** basis.

To complete Part B, prepare a brief presentation summarising your research journal. The presentation must be **10 minutes or less**. You may use whatever presentation software you wish (e.g. PowerPoint, Beamer) to prepare slides to accompany your presentation.

Attend the timetabled research presentation session, where you will present your work to the tutor and your peers. You will receive **immediate informal feedback**.

Part C

Part C is a **single summative submission**. This work is **individual** and will be assessed on a **criterion-referenced** basis using the criteria listed in the marking rubric at the end of this document.

To complete Part C, revise your report from Part A to take into account any feedback you have received so far.

Upload the compiled .pdf version of your journal to LearningSpace. Note that LearningSpace will only accept a single .pdf file. Please check the .pdf file carefully for errors before submission.

You will receive **formal feedback** three weeks after the final deadline.

Part D

Part D consists of a **single formative submission**. This work is **individual** and will be assessed on a **threshold** basis.

To complete Part D, bring the final version of your research journal to the timetabled viva session. Be ready to discuss your work with the tutor.

You will receive **immediate informal feedback**.

Additional Guidance

The papers listed are widely regarded as seminal works in the field of computer science. As with all papers, they were influenced by work that came before, and have influenced work that came after. They are decades old, but all of them have played a significant role in shaping the state of computing in 2020. Your task is to develop an understanding of *why* these papers are seminal: how they fit into the context of what came before, what they contributed to the state-of-the-art at the time they were published, and how they have gone on to influence subsequent thinking in the field.

As much as possible you should focus your reading on peer-reviewed scholarly sources reporting primary research: articles in scientific workshops, conferences, journals, and some books or book chapters. Other sources tend to be less rigorous, and should be used only for background information or in cases where their use can be convincingly justified. It is almost never appropriate to cite Wikipedia and other similar online sources, although these are often useful for identifying further scholarly works.

A common pitfall is to focus too much on summarising the content of the papers you have read. For higher marks you need to demonstrate **insight** into what you have read: forming inferences and analyses beyond what is written in the paper. Some questions you might ask yourself are: Why is the paper significant and/or influential? What is the problem it is trying to solve, and why is that problem important? Why did the researchers choose the approach that they did? Is there anything counterintuitive or surprising in the paper? Do you disagree with any of the assumptions or claims it makes? Does the paper suggest any further research questions?

A related pitfall is to structure the journal as a sequence of disconnected entries. Instead aim to **synthesise** multiple papers into a cohesive argument, drawing connections between works by different authors. Understanding individual works is useful, but forming a holistic picture is much more valuable.

Most researchers write scientific papers for the intended audience of their fellow researchers. Thus some papers can seem impenetrable to the novice reader. Don't lose heart! Discuss the paper with your peers. Follow up the papers it cites to find alternative explanations. If all else fails, continue reading the paper — often a difficult paragraph is clarified by something which appears later.

FAQ

- **What is the deadline for this assignment?**
  Falmouth University policy states that deadlines must only be specified on the MyFalmouth system.
- **What should I do to seek help?**
  You can email your tutor for informal clarifications. For informal feedback, make a pull request on GitHub.
- **How and when will I receive feedback?**
  You will receive informal feedback during the research presentation and peer review sessions. You will receive formal feedback via LearningSpace three weeks after the summative deadline.
- **Is this a mistake?**
  If you have discovered an issue with the brief itself, the source files are available at:

  https://github.com/Falmouth-Games-Academy/bsc-assignment-briefs
  .
  Please make a pull request and comment accordingly.

Marking Rubric

All submissions and assessment criteria for this assignment are individual.

To **pass** this assignment (achieve 40% or more), you must demonstrate adequate research and information skills. Adequate participation in-class peer-review activities at least at the level of basic competency is required. Sources must be cited in an appropriate manner, without any obvious errors. There must be no breaches of academic integrity.

Criterion	Weight	Near Pass	Adequate	Competent	Very Good	Excellent	Outstanding
Basic Competency Threshold	30%	At least one part is missing or is unsatisfactory. Breach of academic integrity.					
RESEARCH: Breadth of reading	15%	None of the articles listed in the reading list are referenced. Fewer than 2 additional sources, not listed in the reading list, are referenced.	One of the articles listed in the reading list is referenced. An additional 2 sources, not listed in the reading list, are referenced.	One of the articles listed in the reading list is referenced. An additional 5 sources, not listed in the reading list, are referenced.	One of the articles listed in the reading list is referenced. An additional 8 sources, not listed in the reading list, are referenced.	One of the articles listed in the reading list is referenced. An additional 12 sources, not listed in the reading list, are referenced.	One of the articles listed in the reading list is referenced. An additional 16 sources, not listed in the reading list, are referenced.
RESEARCH: Depth of insight	20%	No insight is demonstrated. Papers are merely paraphrased.	Little insight is demonstrated. Papers are summarised in the student's own words.	Some insight is demonstrated. Attempts are made at discussion beyond summary.	Much insight is demonstrated. Discussion is inferential in nature.	Considerable insight is demonstrated. Discussion is analytical in nature.	Significant insight is demonstrated. Discussion is analytical and evaluative in nature.
RESEARCH: Specificity, verifiability & accuracy of claims	10%	No citations to evidence to claims. Substantial errors and/or misinterpretations.	Few claims have a clear source of evidence. Significant errors and/or misinterpretations.	Some claims have a clear source of evidence. Many errors and/or misinterpretations.	Many claims have a clear source of evidence. Some errors and/or misinterpretations.	Most claims have a clear source of evidence. Few errors and/or misinterpretations.	All claims have a clear source of evidence. Almost no errors and/or misinterpretations.
RESEARCH: Synthesis	15%	No attempt has been made to synthesise information from multiple sources.	A superficial attempt has been made to synthesise information from multiple sources.	A reasonable attempt has been made to synthesise information from multiple sources.	Information from multiple sources is synthesised into a somewhat cohesive whole.	Information from multiple sources is synthesised into a cohesive whole. Connections are analytical in nature.	Information from multiple sources is synthesised into a strongly cohesive whole. Connections are analytical and evaluative in nature.
RESEARCH: Spelling & grammar	5%	Substantial spelling and/or grammatical errors.	Many spelling and/or grammatical errors.	Some spelling and/or grammatical errors.	Few spelling and/or grammatical errors.	Almost no spelling and/or grammatical errors.	No spelling or grammatical errors.
RESEARCH: Structure	5%	There is no structure, or the structure is unclear.	There is little structure.	There is some structure. A few sentences and paragraphs are well constructed.	There is much structure. Some sentences and paragraphs are well constructed.	There is much structure, highlighting the key themes. Most sentences and paragraphs are well constructed.	There is much structure, highlighting the key themes. All sentences and paragraphs are well constructed.