ENGG7811 Research Methods (Semester 1, 2024)
Assignment 1

Aim: The aim of this assignment is for you to research sources, work effectively with a range of reference formats and metrics relating to researchers and publications. This assignment builds on the databases and practices you have learned in lectures and tutorials. However, you will need to search bibliometrics beyond those given in class. Use complete sentences with clear descriptions and justifications. For all quality measures, state the source, date of access, and provide a correctly formatted reference.

Submission: Submission is via Turnitin on Blackboard.
Ensure your submissions are text-based using a standard font (e.g. Times Roman, Arial, Calibri). Your report should be in .pdf format and named according to the format `a1-ENGG7811-[SID].pdf`, where SID is your student ID.

Referencing: Use IEEE format except where stated. Further notes on referencing and plagiarism are provided at the end of this Assignment.

Marking: You are required to answer all 5 questions in this assignment with a total worth of 40 marks. Assignment 1 contributes 20% to your final grade.

Due Date: 1pm, Monday 25 March 2024 [AEST]

Question 1. Conflicts of Interest   (11 marks)

(a) Define the term "conflict of interest" and provide examples of situations where conflicts of interest might arise in a research context.   (<200 words, 2 marks)

(b) Describe the role of transparency in managing conflicts of interest. How can researchers and research institutions communicate and address potential conflicts to maintain trust with stakeholders?   (<200 words, 2 marks)

(c) Provide an example conflict of interest that might arise in financial transactions with respect to research. How can researchers ensure fair and transparent practices in these situations?   (<150 words, 2 marks)

(d) Describe a context not covered by your above answers, where a conflict of interest should be declared or avoided in research, how it may influence decision making, and how the conflict of interest can be managed or mitigated.   (<150 words, 3 marks)

(e) Explain the difference between an actual conflict of interest and the appearance of a conflict. Why is it important for researchers and research institutions to address both aspects?   (<200 words, 2 marks)

Question 2. Quality metrics for journals and journal articles (10 marks)

Question 2 and Question 3 refer to the two articles cited below. When answering questions, remember to include the databases you used and the dates of access, e.g., h-index = 42 from [database] accessed on [date].

Article 1
[1] Y. LeCun, Y. Bengio, and G. Hinton, "Deep learning," *Nature*, vol. 521, no. 7553, pp. 436–444, May 2015, doi: 10.1038/nature14539.

Article 2
Selvaraju, R. R., Cogswell, M., Das, A., Vedantam, R., Parikh, D., & Batra, D. (2020). Grad-CAM: Visual Explanations from Deep Networks via Gradient-Based Localization. *International Journal of Computer Vision*, 128(2), 336–359. https://doi.org/10.1007/s11263-019-01228-7

(a) The two citations above are in different formats, IEEE and APA style respectively. What are key differences between these two formats? Show an example of an in-text citation for Article 1 using IEEE style and APA style formatting. (3 marks)

(b) Determine and report the h5-Index of the last author for Article 2 based on Scopus, Google Scholar and WoS. Is the h5-Index of the author the same or different across these three databases? Give a suitable explanation for your answer. (5 marks)

(c) Choose one metric suitable for assessing the quality or impact of Article 2. Justify your choice and report its value. (2 marks)

Question 3. Teams of authors (3 marks)

Describe what the authorship reveals about the research team of Article 2 in Question 2 above. You may consider factors such as the size of the team, whether it is multidisciplinary, who is the corresponding author, the academic positions of the authors – were they students, or faculty, the affiliations of the authors (which university or industry organisation they worked for) or any other relevant factors.

Question 4. Research Ethics (10 marks)

(a) Imagine you are collaborating with a team on a machine learning project using medical records to develop predictive models. Discuss the ethical considerations surrounding data collection, ownership, confidentiality, and sharing that must be addressed, as well as potential measures to mitigate any potential risks or negative consequences. (6 marks)

(b) When evaluating the developed predictive model, you find that some of the data points don't fit the expected trend, and you get significantly better performance by removing those data points. Can these data points be removed for publication, and why or why not? What are appropriate steps to do in this situation? (2 marks)

(c) Why do you think getting research ethics is important? (2 marks)

Question 5. Quality metrics for conferences and conference papers   (6 marks)

Imagine that your supervisor has asked you to publish in a conference and is considering either "Association for Computation Linguistics" or "IADIS International Conference Applied Computing".

(a) What are the conference-level metrics that will help to determine the quality of the above-mentioned conferences? Justify your choice and report its value.   (3 marks)

(b) What are the ANZSRC Fields of Research (FoR) codes in the CORE database used for the above-mentioned conferences from 2017 − 2021? Report all the values in a table and provide an accurate citation to the database used.

(3 marks)

Academic Misconduct

The University defines Academic Misconduct as involving "a range of unethical behaviours that are designed to give a student an unfair and unearned advantage over their peers." UQ takes Academic Misconduct very seriously and any suspected cases will be investigated through the University's standard policy (`https://ppl.app.uq.edu.au/content/3.60.04-student-integrity-and-misconduct`). If you are found guilty, you may be expelled from the University with no award.

All sources of information should be attributed, and references should use IEEE format except where stated. Use quotation marks when citing specific sentences. Do not plagiarise. In other words, do not directly copy your answers from other sources, such as lecture notes, material written by others, material written by you for other purposes or courses, or any other source. See university and course material on how to avoid plagiarism. Acknowledge the source of all ideas that you use in your work, using methods discussed in the lectures and tutorials.

Generative AI should be treated just like any other source. If you have utilised Generative AI tools such as ChatGPT, you must clearly cite any use of generative AI in each instance. To reference your use of AI:

- See: https://guides.library.uq.edu.au/referencing/chatgpt-and-generative-ai-tools
- Describe how the AI was used in the reference, e.g.:
  "EMI Instrumentation Presentation" prompt; initial slide outline for presentation on EMI shielding in MRI ChatGPT, Apr 2023 version, OpenAI, 2 Feb. 2024, `chat.openai.com/chat`.
- If referencing specific text, do not copy the generated material – just like a journal article or textbook you should write the generated material in your own words, unless quoting (which you should always do sparingly).

Failure to reference use of generative AI tools constitutes student misconduct under the Student Code of Conduct.

It is the responsibility of the student to ensure that you understand what constitutes Academic Misconduct and to ensure that you do not break the rules. If you are unclear about what is required, please ask.

It is also the responsibility of the student to take reasonable precautions to guard against unauthorised access by others to his/her work, however stored in whatever format, both before and after assessment.

All submitted files will be subject to electronic plagiarism detection and misconduct proceedings will be instituted against students where plagiarism or collusion is suspected. If you collude to develop your report, you will be caught.

For more information, please consult the following University web pages:

- Information regarding Academic Integrity and Misconduct:
    - https://my.uq.edu.au/information-and-services/manage-my-program/student-integrity-and-conduct/academic-integrity-and-student-conduct
    - http://ppl.app.uq.edu.au/content/3.60.04-student-integrity-and-misconduct
- Information on Student Services:
    - https://www.uq.edu.au/student-services/

Late submission

Students should not leave assignment preparation until the last minute and must plan their workloads to meet advertised or notified deadlines. It is your responsibility to manage your time effectively.

Assessment submissions received after the due time (or any approved extended deadline) will be subject to a late penalty of 10% per 24 hours of the maximum possible mark for the assessment item.

In the event of exceptional circumstances, you may submit a request for an extension. You can find guidelines on acceptable reasons for an extension here https://my.uq.edu.au/information-and-services/manage-my-program/exams-and-assessment/applying-extension. All requests for extension must be submitted on the UQ Application for Extension of Assessment form at least 48 hours prior to the submission deadline.