

Inf 2 - Foundations of Data Science

Task: Preparation for S2 Week 2 Workshop – Critical Reading

In the S2 Week 2 workshop, we will assess students' critiques of data science articles. This workshop will prepare you for CW2 in which you yourself will read, summarize and critique data science articles from the literature.

As in the previous semester, we will give you a chance to peek at some of the students' submissions from a previous year, this time from CW2. (Don't worry, this year's CW2 is different, so you won't be biasing yourself towards a particular set of answers).

Do this individually in S2 Week 1

1. Read the description of Coursework 2 from the course in 2020/21 (below).
2. Go to **Learn** → **Assessment** → **Examples of Previous Assessment** → **Coursework 2 – Critical Evaluation** and find sample submissions of two students from 2020/21 (we've received their permission to share their work).
3. Go over the submissions of two students from 2020-21 (Files: FDS-S2-02-critique-3-sample-1.pdf, and FDS-S2-02-critique-4-sample-2.pdf) .
4. Read the BBC story about one of the papers, that of using a COVID-19 app to track symptoms (FDS-S2-02-5-critique-bbc-story.pdf) . We've also included the article itself for convenience, but you are not required to read it (FDS-S2-02-6-critique-article.pdf).
5. Try assessing the submissions using the marking rubric FDS-S2-02-critique-2-rubric.
6. You may wish to download the marking spreadsheet FDS-S2-02-critique-8-mark-sheet-individual.xlsx and enter your personal marks in it. (In 2020/21, we had more questions than this year, so we've had to group some of the 2020/21 questions together.) You can write an overall comment too. We will not be assessing your marking – the point is for you to learn about what makes a critical evaluation good.
7. In the workshop, we will ask you to compare your marks with the marks given by other students at your table.

CW2 questions (FDS 2020-21 – not this year’s questions!)

Your task

In CW2, you will critically evaluate data-driven methods and claims from case studies, in order to identify and discuss how the stated conclusions are warranted given evidence provided. You will also evaluate how well an accompanying media report covers the research. We will set out the structure for your evaluation. It’s worth noting that this sort of structured evaluation or research and reporting happens in the real world, for example, see the “NHS News” summaries (archived version)

<https://web.archive.org/web/20201231202454/https://www.nhs.uk/news/>

We have provided you with several possible studies to choose from. Each study includes a report in a popular media outlet, as well as the scientific paper that the report was based on.

Choose one of the studies. Use the template provided to supply answers to the following questions.

1. The following questions relate to the scientific paper of your chosen study. Note that the average length of a sentence is 15-20 words, the average length of a paragraph has between 3 to 6 sentences.
 - a. [Basic] What is the scientific goal of the study? Write one to three sentences
 - b. [Basic] What is the type of study (e.g., randomized trial, prediction model)? Include a brief explanation why it falls onto that category. Write one to three sentences
 - c. [Advanced] What are the hypotheses of the study? Write one paragraph (3-6 sentences).
 - d. **[Advanced] What is the methodology of the study and what is the results (how do the researchers go about testing the hypothesis, and what is the outcome? Write two or three paragraphs.**
 - e. **[Intermediate] What are the statistical methods used in the study and how are they applied to the data? Write one or two paragraphs.**
 - f. [Basic] What are the stated conclusions of the study? Write one paragraph.
 - g. **[Advanced] Provide a critical discussion of the paper. How important or impactful is it? Are there any obvious errors or potential flaws? Write one or two paragraphs.**
 - h. **[Intermediate] Are there any ethical implications of the study? If none, please state so; if yes, how well do the authors relate to these implications? Write one paragraph.**
2. The following questions relate to the media report of your chosen study:
 - a. [Basic] Provide a brief summary of the report. Write up to three sentences.
 - b. [Advanced] How accurately did the report summarize the study? Write one or two paragraphs.

Advice

- When you first read the studies, you will probably find that you don't understand several concepts in the papers. Don't worry; this is normal. Part of the skill of understanding a study is to identify parts you don't understand, and see what you can understand from the rest of the paper.
- Two of the papers discuss confidence intervals, hypothesis testing and logistic regression. The lectures on these topics will be released in Weeks 1 and 2. We will try to release drafts of the lecture notes as soon as possible.
- [“How to read a paper” by Michael Mitzenmacher](#) gives very good advice on reading a paper *critically*.