GUIDE WRITING A SCIENTIFIC ARTICLE

- The Abstract Section: This is a high-level summary written in 1 paragraph and should have less than 300 words. You should cover the following in one sentence or two:
    - background of your study
    - research problem
    - proposed variable to be studied
    - proposed DS/ML solution
    - possible results
    - anticipated impact of your work on society
- The Introduction (at most 2 pages)
    - Should contextualize your problem from a broad to narrow/specific idea(s) of your research work. And state global statistics.
    - Social/cultural/economic/etc challenges that point to technology as a possible solution. The challenges could be inefficiencies, time constraints, inaccuracies, subjectivity, etc. Probably, you are not the 1st to identify the problem. It's good to show (cite your work properly!) people are struggling with the same problem. And perhaps different and novel solutions should be investigated.
    - Comprehending the challenges or risk factors or important variables to study, etc. And cite your work!
    - And state local statistics and the contextual problem.
    - Then state the proposed DS/ML solution, evaluate it, and then put the solution into action/practice/usable by deploying it and its impact.
- The Literature Review (at most 2 pages)
    - State at least 15 case studies. For each state:
        - background, problem, solution, outcomes, impact.
    - Cite your work properly!
- The Methodology Section [at most 4 pages]
    - Should walk us through the CRISP-DM methodology. Consider this subsection

        - Data understanding: clearly stating the source of data, data variables, data types, etc.
        - Data cleaning/preprocessing: propose possible data cleaning remedies and clear reasons as to why (support by citing).
        - Machine learning modelling: propose possible algorithms to employ and state why they were selected. Are the modern and novel in the context of your research work?
        - Performance Evaluation: propose appropriate metrics to evaluate the ML algorithms. Support by citing!
        - Deployment: propose possible deployment environments, e.g. web/mobile/desktop application.

- Results [at most 4 pages]
    - The function of the Results section is to objectively present your key results, without interpretation, in an orderly and logical sequence using both text and illustrative materials (Tables and Figures).
    - The results section always begins with text, reporting the key results and referring to your figures and tables as you proceed.
    - Summaries of the statistical analyses may appear either in the text (usually parenthetically) or in the relevant Tables or Figures (in the legend or as footnotes to the Table or Figure).
    - The Results section should be organized around Tables and/or Figures that should be sequenced to present your key findings in a logical order.
    - The text of the Results section should be crafted to follow this sequence and highlight the evidence needed to answer the questions/hypotheses you investigated.
    - Important negative results should be reported, too. Authors usually write the text of the results section based upon the sequence of Tables and Figures. Discussion

- Discussion [at most 4 pages]
    - The function of the Discussion is to interpret your results in light of what was already known about the subject of the investigation, and to explain our new understanding of the problem after taking your results into consideration.

    - Back up interoperation with existing literature (by cite where appropriate) to support the observed trends.
    - The Discussion will always connect to the Introduction by way of the question(s) or hypotheses you posed and the literature you cited, but it does not simply repeat or rearrange the Introduction. Instead, it tells how your study has moved us forward from the place you left us at the end of the Introduction.
- The Conclusion Section [at most 200 words]:
    - This is a high-level summary of your work.
    - Ideally one or two sentences:
        - Recommend specific course(s) of action.
        - Restate your research problem addressed in the introduction section
        - Summarize your main arguments, important findings, and broader implications
        - Restate key ideas to drive home the ultimate point of your research paper.
        - Provide a “take-home” message that you want the readers to remember about your study.
        - State the potential impact of your work

Formatting:

Overleaf Latex format: https://www.overleaf.com/latex/templates/elsevier-astronomy-and-computing-journal-template/mrvsrqqqdkfr

Other resources:

https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1005619

https://www.elsevier.com/connect/11-steps-to-structuring-a-science-paper-editors-will-take-seriously