



UNIVERSITY OF
BATH

**CM500335: Foundations and Frontiers of Machine
Learning**
Assignment 1: Presenting a research paper

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1 Introduction

This coursework carries a weightage of **30 points** and will be included in the overall mark of **100** for this unit.

It is an individual assignment. You are required to choose a research paper from the list provided below, read it thoroughly, and then write an essay of no more than **1200 words** (not counting references)

- **Pt1** -> The research question(s) that the paper aims to answer and explain the motivations that led to the research.
- **Pt2** -> The paper's significant contributions.
- **Pt3** -> An overview of the methodologies used or introduced in the paper.
- **Pt4** -> Your critical assessment of the research contributions and applications discussed, informed by aspects such as the related works, conclusions and future work.

2 Research papers List

- Oyelade, O.N., Irunokhai, E.A. and Wang, H., 2024. A twin convolutional neural network with hybrid binary optimizer for multimodal breast cancer digital image classification. Scientific Reports, 14(1), p.692. -> [LINK](#)
- Wang, X., Zhang, W., Wang, C., Gao, Y. and Liu, M., 2023. Dynamic dense graph convolutional network for skeleton-based human motion prediction. IEEE Transactions on Image Processing, 33, pp.1-15.-> [LINK](#)

- Mills, J., Hu, J. and Min, G., 2021. Multi-task federated learning for personalised deep neural networks in edge computing. IEEE Transactions on Parallel and Distributed Systems, 33(3), pp.630-641.-> [LINK](#)
- Ding, F., Yu, K., Gu, Z., Li, X. and Shi, Y., 2021. Perceptual enhancement for autonomous vehicles: Restoring visually degraded images for context prediction via adversarial training. IEEE Transactions on Intelligent Transportation Systems, 23(7), pp.9430-9441. > [LINK](#)
- Nirkin, Y., Wolf, L., Keller, Y. and Hassner, T., 2021. Deepfake detection based on discrepancies between faces and their context. IEEE Transactions on Pattern Analysis and Machine Intelligence, 44(10), pp.6111-6121. > [LINK](#)

3 Report Template

You must not exceed 1200 words in this report. Any sources of information should be correctly referenced and a full list of these references provided. Attention should be paid to report presentation, all diagrams must be clearly labelled, and suitable headings and sub-headings used. Ensure that all fonts are legible and appropriate for a technical document.

Please note: We have included a suggested breakdown of sections for your report, but these are guidelines only.

Presenting a research paper: Please provide the title of your paper.

- Section 1 -> Introduction
 - Start with general statements regarding the research topic.
- Section 2 -> Research Questions and Motivations
 - Identify the main research questions the authors investigated and explain their significance.
- Section 3 -> Contributions
 - Provide a summary of the paper's main contributions.
- Section 4 -> Research Methodology and Methods
 - Section 4.1 -> Research Methodology
 - * Provide details on the specific procedures or techniques used in the chosen paper
 - Section 4.2 -> Research Methods
 - * Compare and assess various algorithms and deep learning models, among other things
- Section 5 -> Critique/Evaluation
 - Evaluate the chosen paper
- No Section -> References
 - Please include a correctly cited list of references used in your report

Table 1: Marks for the critical analysis component

Parts	Points
Pt1	5 marks
Pt2	5 Marks
Pt3	10 Marks
Pt4	10 Marks

N.B. - all grades are provisional and subject to change by a Board of Examiners.

4 Submission

Submission file format: PDF (font: Arial, size: 11, if you include figures/tables please make sure they are not too small).

5 Marking criteria

This coursework is worth a total of 30 points, which will be distributed in Table 1.

Your presentation will be evaluated based on the accuracy and clarity of your statements. Moreover, your presentation will be assessed based on the breadth, which refers to the variety of issues that you touch upon, and the depth of your evaluation, which refers to how thoughtful and penetrating your comments are. Finally, the quality of your argumentation will also be evaluated.

6 References

A list of references to printed literature, internet resources, and other sources that you may have used to gather information from. You must use the Harvard [referencing style](#) (Bath).