

# Introduction

The primary objective of the overall group project is to get hands-on practice with at least three important parts of the machine learning (ML) pipeline. You are minimally expected to **1) process the data, 2) train your model, and 3) evaluate your model** with at least one of the provided biomedical datasets.

For the final report specifically (15% of final grade, included in the group project's 50%), it is a group submission and you should collaborate with your group members on one selected task. We leave the specific ML task to you, as long as your group can justify why it is a meaningful problem.

# Tasks

Given the MIMIC-IV and/or MIMIC-CXV datasets, there are many possible ML tasks. Here are two possible tasks to give you ideas.

## Example 1: Supervised classification

Dataset: *MIMIC-IV*, *MIMIC-CXR*

Task: Predict in-hospital mortality from chest X-rays.

Reference paper: [Medical transformer for multimodal survival prediction in intensive care: integration of imaging and non-imaging data](#)

## Example 2: Image-to-text generation

Datasets: *MIMIC-CXR*

Task: Generate radiology reports from chest X-rays.

Reference paper: [Collaboration between clinicians and vision-language models in radiology report generation | Nature Medicine](#)

# Grading

The final report should consist of the following sections with the following grade distribution (with a total of 15%).

- **1% Abstract, introduction.** This should look like an overview of your ML task and your motivation(s) for choosing the task.
- **1% Related work.** We look for relevance and comprehensiveness.
- **5% Methodology.** We look for novelty and validity. A figure showing an overview of your methodology is recommended.
- **5% Experiments, results, discussion.** Your experiments should minimally address the research problem(s) in your introduction. We look for appropriate visualizations and valid interpretation of results. Comparisons with existing method(s), if any, are recommended.

- **3% Conclusion, future work, limitations.** We look for useful insights and limitations for future work.

## Submission instructions

Each group has to submit a zip file (containing your report and code) on Canvas in **Assignments > Project final report & code**. Any group member can submit on behalf of the group. Your zip file should be named in the following format:

*ProjectFinalReportGroupPresentationOrder.zip*. Example filename:  
*ProjectFinalReportGroup1.zip*. Use your group's presentation order [here](#).

Concretely, the zip file should have the following overall structure:

```
ProjectFinalReportGroupPresentationOrder.zip
└─ ProjectFinalReportGroupPresentationOrder
    └─ report.pdf
    └─ code
        └─ README.md
        └─ ...
```

Any late submission will face penalties of 10% of the initial full grades every 24hrs after the deadline. For example, since the full grade for the final report and code is worth 15%, then a submission 48hrs late will get 12% at most.

By default, we will take your group's last submission as the final version. If you want us to take a specific submission as your final submission (e.g. a submission before the deadline), please email Samson at [e0954716@u.nus.edu](mailto:e0954716@u.nus.edu) with the name of the person who submitted it, group presentation order and the time of submission.

## Report

Your group is expected to submit a **6 page max, PDF** report. Your report should follow the NeurIPS 2025 style [here](#) under "Paper Formatting Instructions".

## Code

Your code can be in any format (e.g. Python scripts, Jupyter Notebook). Please upload a **README.md** file (where your group should explain your code and how to run the training and evaluation processes clearly) and your model weights.

## References

Khader, F., Kather, J. N., Müller-Franzes, G., Wang, T., Han, T., Tayebi Arasteh, S., Hamesch, K., Bressen, K., Haarburger, C., Stegmaier, J., Kuhl, C., Nebelung, S., & Truhn, D. (2023). Medical transformer for multimodal survival prediction in intensive care: integration of imaging

and non-imaging data. Scientific reports, 13(1), 10666.

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Tanno, R., Barrett, D. G. T., Sellergren, A., Ghaisas, S., Dathathri, S., See, A., Welbl, J., Lau, C., Tu, T., Azizi, S., Singhal, K., Schaeckermann, M., May, R., Lee, R., Man, S., Mahdavi, S., Ahmed, Z., Matias, Y., Barral, J., Eslami, S. M. A., ... Ktena, I. (2025). Collaboration between clinicians and vision-language models in radiology report generation. Nature medicine, 31(2), 599–608.

<https://doi.org/10.1038/s41591-024-03302-1>