



# AN2DL - First Homework Report DeepL

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November 20, 2024

Note: The following sections represent a suggested structure. Feel free to adapt them to better suit your specific project needs.

#### 1 Introduction

In this section, you should present your project's context and objectives. You might want to:

- Define the problem (you may use italics to highlight definitions)
- State your goals (emphasise key points with bold)
- Outline your approach

For instance, you might write: "This project focuses on *image classification* using **deep learning** techniques."

## 2 Problem Analysis

Here you can discuss your initial analysis of the problem. Consider including:

- 1. Dataset characteristics
- 2. Main challenges
- 3. Initial assumptions

If you need to reference papers, use the citation command: Recent work [1] suggests..."

#### 3 Method

This section should detail your approach. You can use equations to explain your methodology. For example, a simple model representation:

$$f(x) = \operatorname{softmax}(Wx + b) \tag{1}$$

Or a more complex loss function:

$$\mathcal{L} = -\frac{1}{N} \sum_{i=1}^{N} y_i \log(\hat{y}_i)$$
 (2)

Reference these equations in your text, like: "As shown in equation 1..."

## 4 Experiments

For your experiments, you might want to present your results in tables. Here's an example of a wide table comparing different models:

For more specific measurements, you might use a narrower table:

Table 1: An example of wide table. Best results are highlighted in **bold**.

Model	Accuracy	Precision	Recall	ROC AUC
VGG18	$72.20 \pm 3.06$	$94.95 \pm 0.52$	$86.95 \pm 0.55$	$80.16 \pm 0.81$
Custom Model	$27.71 \pm 3.19$	$75.70 \pm 1.07$	$55.75 \pm 2.16$	$36.60 \pm 1.26$
ResNet18	$\textbf{89.24}\pm\textbf{2.38}$	$95.54\pm0.49$	$93.43\pm1.30$	$91.68\pm0.71$

Table 2: An example of table. Best results may be highlighted in **bold**.

Time $[\mu s]$	Distance [mm]	
22±4	8±1	
$17 \pm 3$	$7{\pm}1$	
$15 \pm 3$	$6\pm1$	
$13\pm 2$	$5\pm1$	
$10\pm 2$	$4\pm1$	
$8\pm2$	$3\pm1$	
$5\pm1$	$2\pm1$	
37±1	1±1	

You can also include figures to visualise your results:

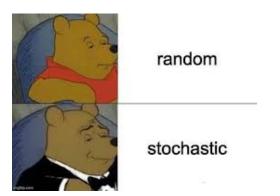


Figure 1: Example figure showing [describe what the figure shows]

Reference figures using like: "As shown in Figure 1..."

#### 5 Results

Present your main findings here. You might want to:

- Compare your results with baselines
- Highlight key achievements using **bold text**
- Explain any unexpected outcomes

#### 6 Discussion

In this section, analyse your results critically. Consider:

- Strengths and weaknesses
- Limitations and assumptions

### 7 Conclusions

Summarise your work and discuss potential future directions. This is where you can:

- Restate main contributions
- Suggest improvements
- Propose future work

# 8 Logbooks

Here we can write our personal logbooks.

### 8.1 Matteo

- Google Drive folder
- LATEX repository
- A bit of data inspection and noised aumentation
- 8.2 Lorenzo

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8.3 Michele

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8.4 Elena

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## References

[1] Y. LeCun, Y. Bengio, and G. Hinton. Deep learning. nature, 521(7553):436-444, 2015.