Assignment 1 Feed-Forward

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Outline

- How to do well in Assignment 1, 2, and engineering reporting
- Learning from past cohorts
- What was done well
- How you can avoid making common mistakes
- Some quick examples of good and bad presentation

Feed-Forward

The Good

- Most students completed all tasks
- Getting familiar with using Matlab
- Seeing practical significance of signal analysis

Feed-Forward

Report - Professional Engineering Report

- Who is the audience?

Feed-Forward

Report - Professional Engineering Report

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  - The head of communications engineering at BASA

Feed-Forward

Report - Professional Engineering Report

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  - The head of communications engineering at BASA
  - They are an expert, and probably involved in many projects of communication systems
  - Means can't assume they know everything about the problem off the top of their head
  - task states should be "writing to inform"
  - All this means you need to write a professional engineering report
  - Any engineer should be able to read your report and understand it fully (not just the teaching team)

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- How would you write your report if your employment depended on your performance?
- Communication is what separates the good engineers from the great

Tell a Story

Feed-Forward

Report - Professional Engineering Report

- Purpose of Professional Engineering report

Feed-Forward

Report - Professional Engineering Report

- Purpose of Professional Engineering report
  - Point of reference
  - Communicate what you have done to other engineers
  - Communicate what you did with yourself in the future
  - Ensure compliance with industry standards and legislation
  - Could become a legal document

Feed-Forward

Report - Content

- Marks are awarded based on demonstrated understanding
  - Getting the right numeric answer is less than half the grade
- You **MUST** include justification within your report
  - Poor justification explains what, but not why
  - Good justification explains what, and why
- Each solution step should be motivated with a link to theory or context

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Report - structure

- Include a title page, but don't include a table of contents
- Don't copy and paste from the task
  - This doesn't demonstrate *your* understanding
  - Don't use questions as section headings!
- Include (at minimum) all requested figures and appendices
  - `missionA1.m` in appendix
- If in doubt about expectations for general report style, please consult the example report on Canvas or ask the teaching team

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MATLAB

- Your code is part of your demonstration of understanding
  - Identify the problem you're solving and how your code solves it
  - Make code robust to changes in input (avoid magic numbers)
- Code comments should explain "how"/"why", avoid "what"
- For some guidance on writing comments in code (and just writing in general), check out this article here

Feed-Forward

Integrating MATLAB Code Snippets in Report

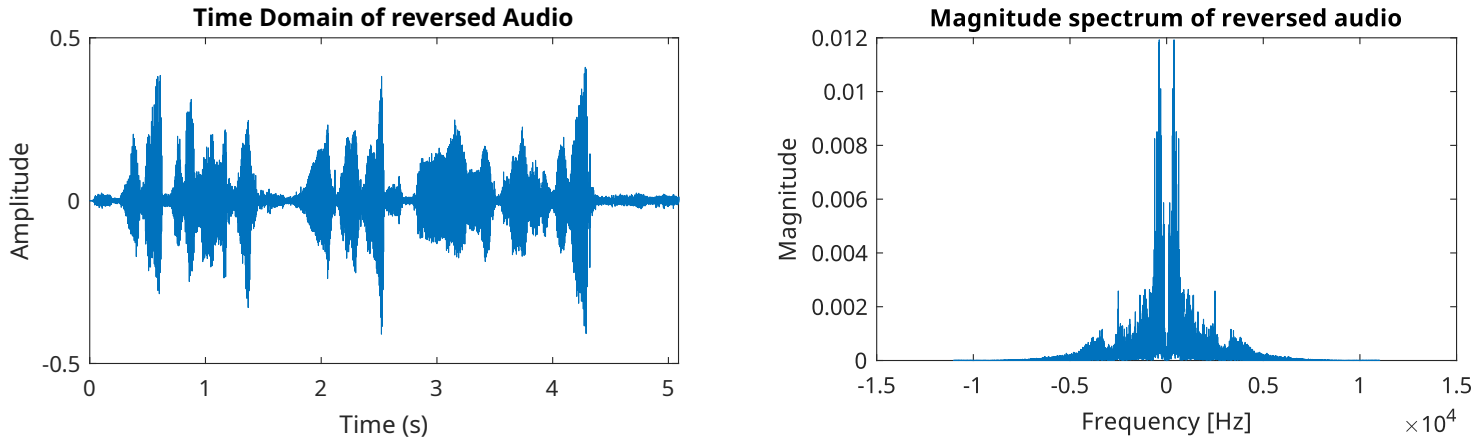
- **NO SCREENSHOTS!**
  - typeset properly (should be able to copy and paste)
  - 44 different ways to do it in word here
  - use `lstings` package in LaTeX
- Any code comments should be brief and to the point, with full explanations of code and any observations your report writing (avoid code dumps)
- As a guide, the size of your code snippet should be around 10 lines
- Don't include code for generating plots or assignment data

Feed-Forward

Integrating Plots in Report

- **NO SCREENSHOTS!**
  - use `saveas()` command to export figure in matlab
  - Use PNG format at minimum
  - For LaTeXcan use vector graphics such as EPS for prettiest plots
- Link your plots to your knowledge and theory
- All figures **MUST** be referred to in text
- Captions should allow reader to understand figure in isolation
- If figure isn't essential, don't include it
- Make axis labels, line thickness and headings of an appropriate size to view

Feed-Forward - Example of plots with vector graphics



(a) (b)

Figure 1: Time domain (a) and magnitude spectrum (b) of audio signal reversed by malfunctioning recording equipment.

Try zooming in on this at home (wont get blurry).

Feed-Forward - Please don't do this

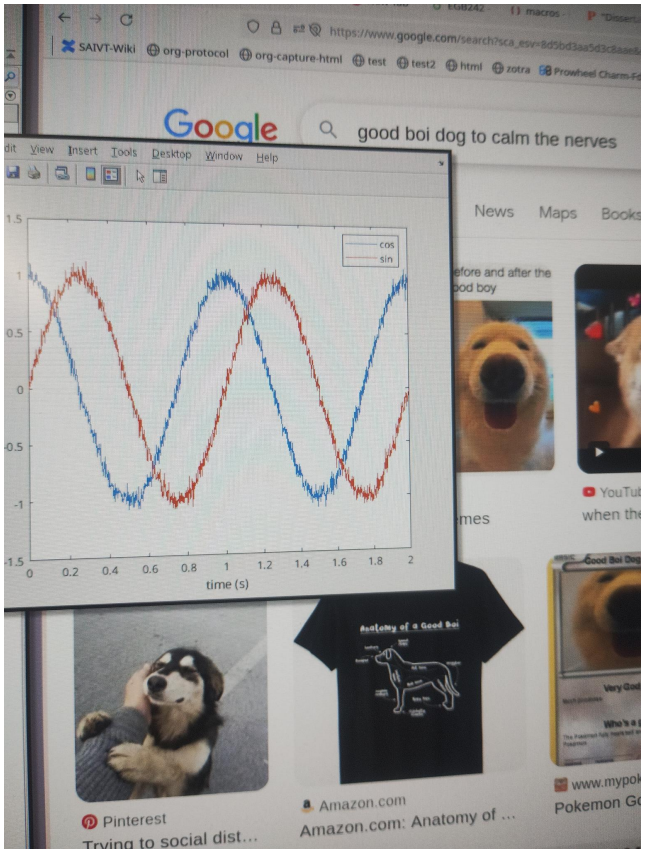


Figure 2: This one hurt me to make.

Feed-Forward

Math

- **NO SCREENSHOTS!**
- Typeset Properly
- Equations should read as part of the sentence
- Requires proper punctuation
- Introduce variable used

Feed-Forward - Equations example

The unilateral Z-transform of a discrete real signal $x[n]$ is given by,

$$z = Ae^{j\theta} \tag{1}$$

$$X(z) = \sum_{n=0}^{\infty} x[n]z^{-n}, \tag{2}$$

where A is the magnitude of z, and θ is the phase in radians.

Feed-Forward

Tables

- **Use Them!**
- Table captions go above (figure captions go below)

Feed-Forward - Example of a table from one of my papers

- Don't worry about the metrics or anything, just an example of how to display a table and caption it.
- Not the only way to format it (can include separator bars etc. if you think helps)

Table 1: Summary of predictive performance of real-time semantic segmentation methods on Jetson Xavier embedded hardware for CamVid dataset. Uncertainty enabled models are given the "Bayes-" prefix.

Model	Macro-F1	Micro-F1	mIOU	fps
ENet	0.6932	0.9116	0.5950	42.291
Bayes-ENet	0.6702	0.8990	0.5698	30.825
PIDNet	0.8683	0.9485	78.4699	73.783
Bayes-PIDNet	0.8661	0.9471	0.7816	59.978

A1 Feed-Forward

Feed-Forward

Report - Submission

- Read the task sheet carefully about what needs to be submitted
- Read the **CRA!**
- Mark your assignment yourself before submission
- Submit all files separately, **NOT** a single zip file

Feed-Forward

General

- Double check your solutions
  - Use your understanding of theory to smoke test your results
  - Even better is when group members double check each other's work (in a group assignment)
- The most common point in the reflection was time management - **start early!**

Feed-Forward

Good luck in Assignment 1!