ECE342 Lab Report

*Partner 1 name: Partner 2 name:  
 Partner 1 student number: Partner 2 student number:*

*Abstract*— Briefly describe your work; what you did and what conclusions you drew. Limit: 150 words

# Introduction

Here you must introduce your work. You should not assume your reader knows what you did so you should write it so that anyone who is reading it can understand your work. Imagine you are writing this for a Professor in ECE, so you do not need to provide background on basic concepts such as what are fixed point numbers etc. But you should describe what you specifically explored in this report.

You should describe each of the following sections, so the reader knows what to expect. And the key conclusions you drew as well. Remember a report is not a novel! You do not want to withhold the key conclusion till the end. There should be no surprises for the reader.

# Description of Analyses

## Dataset analysis: (Add dataset number here).

First, explain how you performed the dataset analysis. You should describe your approach as briefly as possible. You can add code if you want but avoid adding large chunks of code. Code snippets of the key lines of code are preferred. You should also try to present data in the form of tables and graphs as much as possible. Not only does this improve clarity but it also takes up less space than describing your results in text.

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The above shows an example of using a table to place two things side by side to save space. You will find this helpful to save space next to tables, figures, code snippets and graphs.

## EMA Filter analysis

Next, describe how you determined the fixed-point representation that minimized the error for the EMA function. You should also list the Area/latency and ADP analysis for all three formats. Based on your results what conclusion can you draw?

## Sin function analysis

Like the EMA filter, repeat the analysis for you Sin function implementation. In addition to varying the fixed-point representation, you also need to vary the number of terms in the equation to see the effect this has on error. What is the best way to present all this data? How can you show it clearly to the reader without them having to ‘decipher’ it?

## (Optional bonus) Sin function performance improvement

If you attempted this portion, briefly detail what optimizations you did to improve the performance of your implementation. How much of a speed-up did this give you?

# Conclusion

Based on the three analyses you did above, what general conclusions can you draw about the use of these 3 number formats. What recommendations would you provide for future analyses?

# References

If you use any resources other than ECE342 material, you should reference them here. References do not count towards your page limit so you can have them go to page 3 if needed. Where possible, provide a URL to your reference so it is easier for us to find.

1. G. Eason, B. Noble, and I. N. Sneddon, “On certain integrals of Lipschitz-Hankel type involving products of Bessel functions,” Phil. Trans. Roy. Soc. London, vol. A247, pp. 529–551, April 1955. *(references)*
2. J. Clerk Maxwell, A Treatise on Electricity and Magnetism, 3rd ed., vol. 2. Oxford: Clarendon, 1892, pp.68–73.
3. I. S. Jacobs and C. P. Bean, “Fine particles, thin films and exchange anisotropy,” in Magnetism, vol. III, G. T. Rado and H. Suhl, Eds. New York: Academic, 1963, pp. 271–350.