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ECE 4930-004
November 26, 2018

Paper Review: Exploring the Feasibility of Lossy Compression for PDE Simulations

Summary
The data movement involved in checkpoint restart is becoming a bigger issue in current HPC machines and will become an even bigger issue in future machines. This paper aims to solve this problem by using lossy compression techniques to reduce the amount of data being moved around. The researchers found that lossy compression increased efficiency in CR without decreasing accuracy in the simulations.

Strengths
I liked this paper because it seems to contain a lot of concepts that we have learned about throughout the semester from lectures and other papers. I found the results very interesting and thought that the figures were intuitive and easy to understand. Overall, I think this paper was really well done compared to the others we have read previously.

Shortcomings

Improvements

Question(s) for Presenter
Why did you choose these two specific applications for this experiment?

Additional Questions
- Describe the error tolerance selection methodology.
    - It is more or less trial-and-error since it is application dependent. The level of accuracy given by the truncation error gives an upper bound on compression error tolerances.
- What happens in the 1D heat and 1D advection experiments? Compare and contrast.
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- Does this paper make you more or less likely to use lossy compression? Why or why not?
    - More likely. It shows that lossy compression reduces overall checkpoint time without affecting precision.