CSCI 4962 Project Proposal

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Project Title

Using Neural Networks as Numeric Solvers.

Team Members

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Summary

The goal of this project is to read the paper https://arxiv.org/pdf/1711.10561.pdf (Physics Informed Neural Networks) and understand the material. After doing so, I plan to implement/recreate what the paper did; it seems they used neural networks to help solve (numerically) two different differential equations (Burgers' and Shrodinger Equation). I also plan on solving other simpler differential equations that model a spring damper system, pendulum, etc., and comparing them to traditional numerical solvers that are known to work well on them. I am not sure how much I will be able to accomplish due to foreseeable obstacles, but the main things are the goals mentioned above.

Machine Learning Use

Machine learning is involved because it is used to approximate a function, and the function, in this case, is a solution to a differential equation.