Math179 Project Proposal

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1 Project Introduction

For my final project, I will be focusing on project type (1): Application of an existing algorithm to a new problem and potentially new data. I will be studying and applying the deep learning climate model outlined by Nguyen et. al 2023 in *ClimaX: A foundational model for weather and climate* [1]. This paper presents a deep learning approach to climate modeling which allows the user to "directly solve a downstream forecasting or projection task by learning a data-driven functional mapping using neural networks" [1]. This reduces the need for numerical, physically-motivated climate models, which are currently the standard but are computationally heavy because of the many variables involved.

2 Data Sets and Code Base

For the midterm project, I will be working on replicating the results of Nguyen et. al using the CMIP6 climate datasets used in their paper and their accompanying code which can be found on Github [1]. Based on the results of the midterm project, I may extend this work to another dataset.

References

[1] Nguyen, T., Brandstetter, J., Kapoor, A., Gupta, J. K., & Grover, A. (2023). ClimaX: A foundation model for weather and climate. arXiv preprint arXiv:2301.10343.