A Machine learning approach to partial differential equations

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Abstract

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1 Introduction

There exists several different approaches that can be used for investigating one of the fundamental building blocks of natural sciences, partial differential equations. The PDEs can appear in almost any field of science, and can give us information about a wide range of topics, such as heat dispersion, wave dynamics, quantum mechanical systems[see 1, ch. 10].

We will be investigating two different methods of solving partial differential equations, mainly using Deep Neural Networks and ordinary methods of finite differences. For the latter, we will mainly be using

2 Theory

3 Implementation

4 Results

5 Discussion

6 Conclusion

Appendices

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References

[1] Morten Hjorth-Jensen. *Computational Physics, Lecture Notes Fall 2015.* August 2015. URL `https://github.com/CompPhysics/ComputationalPhysics/blob/master/doc/Lectures/lectures2015.pdf`.