A deep learning method for high dimensional PDE's

An application to mean field games

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Master in
Mathematics

at the
Universidad de los Andes
2023

Thesis Title

Thesis Subtitle

Author Name

Abstract

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Acknowledgements

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Introduction

Chapter 2

Backward stochastic differential equations and PDEs

When we deal with deterministic optimal control problems there are two approaches one involving Bellman's dynamic programming principle and the other relying on the Pontryagin's maximum principle. The former approach leads to a partial differential equation named the Hamilton-Jacobi-Bell equation, while the latter leads to a system of ordinary differential equations which are defined backward in time.

Chapter 3

The Deep BSDE method

Chapter 4

Mean field games and crowd motion

Chapter 5

An application

Chapter 6

Conclusion

Appendix A

Neural Networks