



UiO : **Fysisk institutt**

Det matematisk-naturvitenskapelige fakultet

Application of Supervised Machine Learning to the Search for New Physics in ATLAS data

A Study of Ordinary Dense, Parametrized and Ensemble Networks and their Application to High Energy Physics

William Hirst

May 19, 2023

Outline

1 Overview

2 Introduction & Motivation

- Why apply machine learning to HEP problems?
- How do we search for new physics?

3 The Implementation

- Which machine learning methods are used?
- How are the methods compared?
- Training strategy

4 Methods & Results

- An introduction and study of each method
- Comparing the methods
- Compare the methods to previous analysis

5 Conclusion & Outlook

6 References

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Mathematics

Lists

- Bullet lists are marked with a grey box.
- 1 Numbered lists are marked with a white number inside a grey box.

Description highlights important words with grey text.

Items in numbered lists like 1 can be referenced with a grey box.

Example

- Lists change colour after the environment.

Effects

1 Effects that control

Use textblock for arbitrary placement of objects.



Effects

- 1 Effects that control
- 2 when text is displayed

Use **textblock** for arbitrary placement of objects.

Theorem

This theorem is only visible on slide number 2.

Effects

- 1 Effects that control
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- 3 are specified with `<>` and a list of slides.

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Use **textblock** for arbitrary placement of objects.

It creates a box with the specified width (here in a percentage of the slide's width) and upper left corner at the specified coordinate (x, y) (here x is a percentage of width and y a percentage of height).

References I



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