Electronics and Computer Science
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10/02/2024

An AI Approach to Chaotic Physical Systems:

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Second examiner: **TBD**

Progress report submitted for the award of
Bachelors of Science

Abstract

Empirical laws are mathematical generalisations found through observing the physical world. It has taken us centuries of gathering data, keen research along with repeated experiments, and no doubt plenty of talented scientists to discover these laws. Leading us to understand everything from the mysteries that govern the collision of two objects to the shape of the path planets thread upon.

Recent advances in neural networks including increases in computational power permit us to train models, that replicate, fasten and automate our discovery of empirical laws. This extends to even noisy chaotic systems such as the double pendulum. Combined with white box models, symbolic regression and explanable A.I., we can peer into the ”mind,” of how such models, process data and conclude their observations. Human congition is inherently finite in its capacity for thought and observational ability, has been historically overcome through the development of new tools such as the microscope. Similarly, congitive biases can be mitigated, by utillising artificial intelligence, which is a rapidly emerging technology capable of expanding our perception and analysis.

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Abstract

I would like to thank my parents and my supervisor.

Contents

1 Introduction:

1.1 Background Reading:

1.2 Previous Work:

2 Genetic Programming:

3 Making exisitng model more maintainable:

4 Conclusion:

5 Project Planning: