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Genetic Programming for Antarctic Ice Sheet Modelling

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Abstract

This project aims to investigate and evaluate the use of Genetic Programming *(GP)* and Evolutionary Learning techniques for the long-term modelling of Antarctic Ice Sheet measurements.

1. Problem Statement

The changing conditions of Antarctica's Ice Sheets are a significant factor in the changing global climate, particularly with respect to rising sea levels [REFERENCE]. In this context, the ability to accurately model the long-term behaviour of these ice sheets is of great importance.

2. Motivations

Current modelling of Antarctic Ice Sheet measurements - such as that being undertaked at Victoria University's Antarctic Research Center *(ARC)* - is commonly based on the use of traditional statistical models. These models are complex and time-consuming to use, limiting the practical scope of the predictive capabilities. The use of machine learning models shows promise as an approach due to the improved computational efficiency of these predictive systems. Specifically, the use of Genetic Programming *(GP)* and Evolutionary Learning techniques provide the greatest potential due to the increased explainability these methods provide.

3. Goals

4. Evaluation

5. Resource Requirements

No external or additional resources are required for the project as all tooling is publicly and freely accessible.

Bibliography