

Student Name: Komeil Sharafi

Title of thesis: Analysis and prediction of global warming using machine learning algorithms

Supervisor's name: Dr. Mohamed Tawhid

Committee member's names:

1- Dr. Peter Tsigaris

2- Dr. Mark Paetkau

Abstract:

Global warming refers to the gradual increase in the Earth's average temperature, both in the atmosphere and in the oceans, over a prolonged period. This phenomenon is mainly caused by the ever-increasing levels of greenhouse gases in the atmosphere, such as carbon dioxide and methane. These gases trap heat from the sun, leading to a gradual rise in global temperatures.

Our aim in this project is to develop accurate predictive models which enable us to make more precise predictions about global warming based on climate datasets that are reliable and trustworthy.

We intend to integrate machine learning with swarm intelligence algorithms to do the following:

- 1) build a state-of-the-art model to verify the earth's warming and identify contributing factors to global warming.
- 2) analyze and predict greenhouse gases and temperature data so that global warming can be reduced comparatively. Reducing global temperature can help the whole world because not only humans but also different animals are suffering from global warming.

Finally, we will compare the performance of the proposed approaches (combination swarm intelligence algorithms) with several mainstream machine learning algorithms on our data, such as linear regression, K-nearest neighbours, support vector regression and random forest. We will Apply non-parametric statistical tests for the proposed approaches with other machine learning algorithms to see the best performance algorithms.