

Minimizing the Loss Function of an Artificial Neural Network (ANN) Using Genetics Algorithm (GA)

Clariandys Rivera and Leobardo Valera

Abstract Artificial Neural Networks (ANN) are machine learning methods inspired by the networks of biological neurons found in living creatures. We can use mathematics, in particular, linear algebra to calculate the output of an ANN and we can use them for regression tasks.

The loss function used during training is typically the mean squared error, which is minimized using the conjugate gradient method. We propose in this talk an alternative method to minimize the loss function using Genetic Algorithms to prevent overfitting and avoid the excess use of epochs.

We will present an illustrative example where we will point out the differences of both training methods, and finally, we will test our algorithm classifying the database of entrepreneurs of the KEMPEM company and will compare with previous results.

Clariandys Rivera

Instituto de Estudios Superiores de Administración (IESA), Caracas 1011, Venezuela, e-mail: clariandys.rivera@iesa.edu.ve

Leobardo Valera

Department of Mathematical Sciences, University of Texas at El Paso, 500 W. University El Paso, TX 79968, USA, e-mail: leobardovalera@gmail.com