

Neural and Genetic Abnormalities

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Abstract—In this paper, we explore two different optimization problems: a neural network for the Iris dataset and a genetic algorithm for the SHUBERT function. We design, implement, and evaluate both optimization techniques, comparing their performance and discussing the advantages and disadvantages of each method. The artificial neural network is employed to classify iris flowers based on their morphological features, while the genetic algorithm is utilized to optimize the SHUBERT function, a well-known benchmark problem in the global optimization domain. By comparing the results of these two distinct optimization approaches, we provide insights into their applicability and effectiveness in solving different types of problems.

Index Terms—Machine Learning, Deep Learning, Neural Networks, Genetic Algorithms, Classification, Iris, Optimisation

I. INTRODUCTION

In recent years, optimization techniques have gained significant attention due to their wide range of applications in various fields such as machine learning, engineering, and finance. Among these techniques, artificial neural networks (ANNs) and genetic algorithms (GAs) have emerged as powerful tools for solving complex problems. This paper explores the application of ANNs to classify the Iris dataset, a well-known benchmark problem in machine learning, and the use of GAs to optimize the SHUBERT function, a challenging global optimization problem. By comparing the performance of these two distinct optimization methods, we aim to provide a deeper understanding of their strengths and weaknesses, as well as their suitability for different types of problems. This paper will cover the design, implementation, evaluation, and comparison of ANNs and GAs in the context of the Iris dataset classification and SHUBERT function optimization.

II. EASE OF USE

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Define abbreviations and acronyms the first time they are used in the text, even after they have been defined in the abstract. Abbreviations such as IEEE, SI, MKS, CGS, ac, dc, and rms do not have to be defined. Do not use abbreviations in the title or heads unless they are unavoidable.

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Number equations consecutively. To make your equations more compact, you may use the solidus (/), the exp function, or appropriate exponents. Italicize Roman symbols for quantities and variables, but not Greek symbols. Use a long dash rather than a hyphen for a minus sign. Punctuate

equations with commas or periods when they are part of a sentence, as in:

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Please use “soft” (e.g., `\eqref{Eq}`) cross references instead of “hard” references (e.g., (1)). That will make it possible to combine sections, add equations, or change the order of figures or citations without having to go through the file line by line.

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E. *Some Common Mistakes*

- The word “data” is plural, not singular.
- The subscript for the permeability of vacuum μ_0 , and other common scientific constants, is zero with subscript formatting, not a lowercase letter “o”.
- In American English, commas, semicolons, periods, question and exclamation marks are located within quotation marks only when a complete thought or name is cited, such as a title or full quotation. When quotation marks are used, instead of a bold or italic typeface, to highlight a word or phrase, punctuation should appear outside of the quotation marks. A parenthetical phrase or statement at the end of a sentence is punctuated outside of the closing parenthesis (like this). (A parenthetical sentence is punctuated within the parentheses.)

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- There is no period after the “et” in the Latin abbreviation “et al.”.
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An excellent style manual for science writers is [7].

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Component heads identify the different components of your paper and are not topically subordinate to each other. Examples include Acknowledgments and References and, for these, the correct style to use is “Heading 5”. Use “figure caption” for your Figure captions, and “table head” for your table title. Run-in heads, such as “Abstract”, will require you to apply a style (in this case, italic) in addition to the style provided by the drop down menu to differentiate the head from the text.

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citation [6].

Fig. 1. Example of a figure caption.

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