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CSCI 4820-001

Project #3

Due: 10/9/24

A.I. Disclaimer: Work for this assignment was completed with the aid of artificial intelligence tools and comprehensive documentation of the names of, input provided to, and output obtained from, these tools is included as part of my assignment submission.

Overall, I was confused with this project due to vagueness of instructions and having to figure out how to use the sklearn library and more Python functions and data structures. I was able to use Claude 3.5 Sonnet and Cursor to augment my understanding of the project and make my code more efficient.

I started by using Claude 3.5 Sonnet to help explain the project to me, which helped a little. A screenshot of a computer

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I started by writing my custom Logistic Regression class, but got stuck with the fit() and predict() functions, as I was just really confused about what they should do and how. It confirmed that my predict function was correct, and helped significantly with the fit() function.

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I was also confused with the X features table and Y labels list. After having it explained step-by-step I started feeling a bit better about understanding the project.

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I came back to the gradient descent part of the code that Claude 3.5 Sonnet provided so that it could explain it so I could understand it better, which allowed me to adjust it to work a bit better.

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As I was testing my code and using debug tools, I discovered that my predictions were using 1d arrays, rather than 2d arrays after the first iteration. I did some bug tracking and learned that math.pow(math.e), -z)) was only working on single elements, but as suggested by Claude and using np.exp(-z)) it allowed the code to work on entire arrays at once.

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I noticed my feature table assignment loop was taking longer than I expected, usually about 2 to 5 minutes, so I asked my IDE AI “cursor-small” to assist with the time complexity. It explained to me what Python sets are and significantly reduced the time it takes to run this loop to below 15 seconds. I first tried to reduce the time complexity myself but wasn’t getting any progress since I haven’t used sets in Python before, although they are similar to dictionaries.

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