

CART 498

Assignment 3

Short Essay - Self Reflection

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For this assignment, I chose to structure my code in a way where I make 2 separate calls to the openAI API, in order to have more control over each of the desired generated response contexts. In the first call, where the bot is actually ‘calculating’ the answer to the equation, the model has a very low temperature (0.0) as well as a low top_p (0.0), forcing the model to choose the most probable tokens, and keeping the randomness to a minimum, in hopes of achieving an accurate ‘calculation’ result. The bot is almost 100% successful in retrieving the correct values when both n and i are less than or equal to 4; but as these numbers increase, the bot begins to struggle, as the final results get longer and longer. This is because the model isn’t actually calculating anything, it is only predicting each digit token-by-token based on patterns from its training data. Smaller results like 256 are much more common sequences the model has seen before and ‘memorized’. With larger results, the model begins to predict each digit sequentially without any real mathematical logic, causing errors to compound with each digit. I also used Claude AI as a resource to help me create a detailed and structured developer prompt for the calculation model, aiming to explicitly define the mathematical operation and output format in order to maximize the model’s precision and consistency while performing the iterative squaring task. Furthermore, in order to make my bot more self deprecating, I kept track of the number of times that it got the result wrong, and then multiplied this value by 0.5 to dynamically increase the temperature value of the model which generates the self deprecating response. Thus, with each successive incorrect response, the bot becomes more and more unpredictable, and begins to make less and less sense. (This should work in theory, but it is unclear to me whether the attributes of the model are actually modified with each iteration, as the responses with the model at a high temperature are not as unpredictable as they were when experimenting during class time).