# Statistical/Hypothetical Question.

The primary question guiding this analysis was to understand how students' perception of understanding of artificial intelligence (AI) correlates to their academic performance, and where possible to tie this to an impact on critical thinking, problem solving, and creativity. The analysis isa aimed at exploring whether students who perceive themselves as having a higher understanding of AI tend to perform better academically and to examine the impact of various perceived advantages and disadvantages of AI on students' GPA and test scores.

* Does the use of AI have an impact on a students’ core competencies, such as critical thinking, problem solving, and creativity?
* Does a students’ understanding and use of AI influence their performance?

# Outcome of Your EDA.

The exploratory data analysis (EDA) revealed several interesting trends. The histogram of USA\_GPA displayed a distribution with multiple peaks, with more peaks occurring towards the higher GPAs. This leads me to believe that higher performing students not only have a more academic understanding of course material, but also that of the world and technology. An over-use of AI would likely result in high performing students that are unable to keep up in cases where AI is not available. A significant observation was the clustering of GPAs around the 2.5-3.0 range, suggesting a tendency toward over-reliance in common situations and lower results when AI resources were not available. The scatter plot analysis further supported the weak but positive correlation between perceived understanding of AI and GPA, indicating that students who perceive themselves as more knowledgeable about AI tend to have slightly higher GPAs. As such, not all students overly rely on the use of AI.

# What Do You Feel Was Missed During the Analysis?

The greatest opportunities that exist in this analysis come from a lack of data, or rather, scope of the research. If I were to conduct my own research, I would gather additional information on how students use AI and the structure of the classes they are enrolled in. Courses that prohibit AI use or primarily rely on tests, quizzes, and labs should be identified or excluded from the dataset to ensure more accurate results. Additionally, I would assess the experiences of both students and teachers with AI to better understand how they interact with it and the environments in which they operate.

# Were There Any Variables You Felt Could Have Helped in the Analysis?

1. AI Usage by Students: Data on how students use AI in their coursework.
2. Class Structure: Information on the structure of classes, including whether AI use is allowed or prohibited.
3. Course Types: Identification of courses that primarily use tests, quizzes, and labs.
4. Student Experience with AI: Data on students' experiences and interactions with AI.
5. Teacher Experience with AI: Data on teachers' experiences and interactions with AI.
6. Learning Environment: Information on the environments in which students and teachers use AI.

# Were There Any Assumptions Made You Felt Were Incorrect?

Not necessarily assumptions, some of the analysis I performed was based on variables with a true/false datatype. These didn’t relate to graphing as well as I had intended because the data appears to be skewed into one of two results. While this is true, having converted the data to a 1/0 poorly represents the results in a graph form. Should I do this again, I would research different way to leverage booleans in statistics rather than committing to a graph. Should I have had this knowledge prior to the early/mid semester I may have made different decisions regarding which variables to use.

# What Challenges Did You Face, and What Did You Not Fully Understand?

The main challenges I faced were related to how to tell the story I wanted with the data I had. I mean this as in focusing on the areas related to human/AI interaction and the impact on core competencies. I found the data better lent itself to an analysis of students’ perceptions towards AI and their performance. I would like to have expanded upon this dataset to better reflect my original goal rather than one adjacent to what I was hoping for. I think there is value to both and there is a definite relation there, but I deviated from what I initially wished to do.