



AI4ICPS



IIT Kharagpur

IIT KHARAGPUR AI4ICPS I HUB FOUNDATION

Hands-on Approach to AI, Cohort-2, July – October 2024

Assignment 1: Mathematical Foundations for AI and ML - I

Due date: Friday 19th July 2024, EOD – IST.

Important Instructions for submitting solutions

1. Submit the solution to all questions in the assignment should be submitted in a **single PDF file with not more than 500 words**.
2. Any plagiarism if detected will automatically attract **zero marks** for that assignment.
3. It is preferable if the **text of PDF file can be extracted** through a PDF extractor e.g. PyPDF. For example, pictures of handwritten text are not extractable, whereas PDF generated by MS Word, Latex, etc., are extractable.
4. Exceptionally good solutions with extractable text may receive **special appreciation** from the teachers.

Questions:

1. What are the measures of central tendency, and how do they differ from each other?
2. How do you interpret the standard deviation in the context of data variability?
3. What is a box plot, and what information can you extract from it?
4. Explain the significance of the interquartile range (IQR) and how it is used to detect outliers.
5. How Do Maximum Likelihood Estimators (MLE) Work?