Understanding Permutations

Data Science and A.I. Lecture Series

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Introduction to Permutations

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- Total permutations $= 3! = 6$.

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- Example: Find the number of ways to arrange 3 objects out of 5.

$$P(5, 3) = \frac{5!}{(5 - 3)!} = \frac{120}{2} = 60$$

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- Simplify using factorials:

$$P(n, r) = \frac{n!}{(n-r)!}$$

Example Problems

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- Example 2: How many ways can a committee of 2 be formed from 6 people?

$$P(6,2) = \frac{6!}{(6-2)!} = \frac{720}{24} = 30$$

Questions to Consider

- How does the formula change if repetition is allowed?
- What happens when $r = n$?
- How does permutation differ from combination?

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