

## #Week 1 summary

- **Exploring Entropy Foundations:**

Investigated the foundational concept of entropy, different measure of entropy and its calculation method with respect to probability distribution.

- **Hypothesis Formulation:**

Formulated a conjecture about the relation between entropy and the degree of symmetry present in a system. This hypothesis sets the stage for further investigation and analysis.

- **Extrema Analysis of Probabilistic Entropy:**

Employed the language multiplier method to analyze the extrema of the probabilistic entropy formula. Notably, we discovered that maximum entropy aligns with the emergence of uniform probability distributions. Conversely, instances of minimum entropy are tied to non-uniform distributions, where one point holds deterministic probability, while others are assigned probabilities of 0

- **Dataset Compilation and Generation:**

Collected a diverse dataset of images containing repeating patterns with different symmetries. Generated images of fractals using Wolfram Mathematica with controlled parameters

- **Entropy Calculation Techniques:**

Explored and implemented methods to compute entropy of the greyscale representation, entropy of the color histogram.

- **Image Preprocessing:**

Designed and implemented image preprocessing algorithms to ensure that the images are in a suitable format and quality for entropy analysis.