



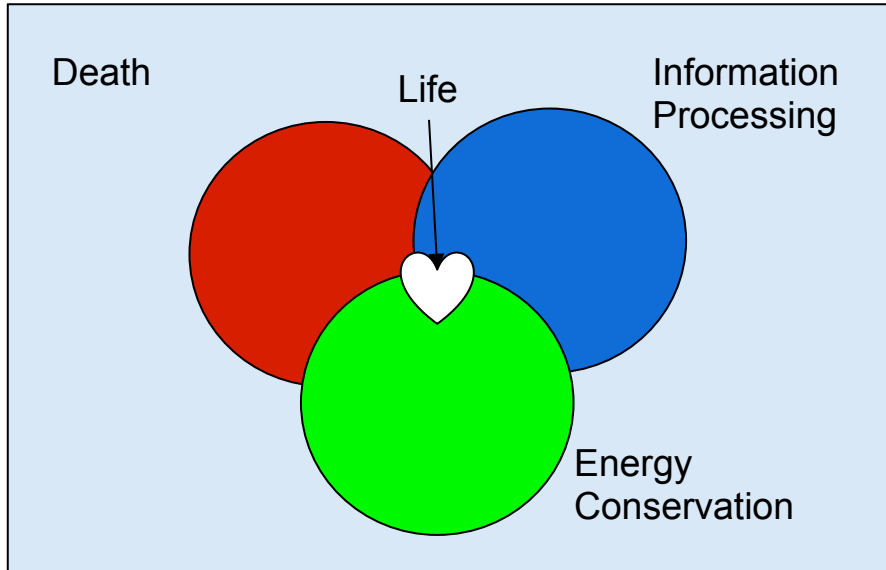
# Tri-Factor Model of Life

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## Life (not necessarily sustainable life) is a combination of 3 factors

- Death, Information Processing and Energy Conservation
- Each factor is necessary but not sufficient and may be subject to different weightings/biases when observed in different environments
- The overlapping area of 3 factors is a strong indication of Life



$$\text{Life} = f\{DxW1, IxW2, ExW3\}$$

Where

D = Death,

I = Information Processing,

E = Energy Conservation,

W1, W2, W3 are the different weightings



# Death

- Death is the corollary of Life. By definition, the opposite of Life is Death and to stay alive is the struggle against Death. Therefore, all living beings must have a differentiation between their living and dead forms.

Side note:

- Although all living organisms that we know of have a limited lifespan, I am not sure if a limited lifespan is necessarily a criteria for life.



# Information Processing

- is the ability to make use of or react to surrounding stimulus.
  - Through this may not seem obvious at first sight, but reactions to surrounding stimulus is a mark of either physical movement or chemical action. If neither exist then the object is inanimate.

# Energy Conservation

- All life processes require energy for survival. The laws of thermodynamics dictate that systems in the physical world going through spontaneous change will always proceed in the direction of increased entropy of the universe.
- However, life processes need a system that can gather energy and storing it up in an orderly way for future use (reducing entropy).



# CONCLUSION

- To answer the question “what is life? Will we know it when we see it?”  
I suggest a new approach using Machine Learning based on the function proposed.
- We don't need to postulate what Life is, instead we can feed training data to a computer configured with a neural network (or a k-means algorithm) and allow it to adjust the biases and weights of our factors under different environments conducive to life.