AIGC=AGI : an Elegant Proof

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Have you ever wondered why the public discussion of AIGC and AGI happened roughly at the same time? This paper proves that it is not a mere coincidence.

I. INTRODUCTION

AGI in contrast to AI specially intelligent while generally dumb

nearly zero supervision from its creator

in the sense that it can supervise itself

II. DEFINITION

A. Information

Let I_i denote information of event i [1] .

$$I_i := -\log \frac{1}{p_i} \tag{II.1}$$

$$\langle I \rangle = \sum_i p_i \log(\frac{1}{p_i}) \tag{II.2}$$

Let G denote the set of systems that is capable of outputting positive information on average.

B. Entropy

Let S denote entropy.

$$S := -\sum_i p_i \log(p_i) \tag{II.3}$$

C. Life

Life, denoted L, is the set of systems that evade the decay to thermodynamical equilibrium by homeostatically maintaining negative entropy in an open system [2].

D. Algorithm

Let A denote the set of algorithms.

E. AGI

AGI, denoted AGI, is the set of system that we call AGI, or artificial general intelligence.

$$AGI := L \cap A \tag{II.4}$$

There are many motivations to define AGI in terms of life,

indeed lots of similarities.

An intelligent being has the capability to play the role of Maxwell's daemon[**?**].

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1. Necessariness

2. Sufficientness

F. AIGC

AIGC, or artificial intelligence generating content, denoted $AIGC$, is the set of artificial intelligence systems that is capable of outputting positive information on average.

$$AIGC := G \cap A \tag{II.5}$$

III. LEMMA

Lemma III.1

$$S = \langle I \rangle \tag{III.1}$$

Lemma III.2 *Outputting positive information is equivalent to inputting negative entropy.*

$$G = L \tag{III.2}$$

IV. THEOREM AND DERIVATION

Theorem IV.1

$$AIGC = AGI \tag{IV.1}$$

Proof:

$$G = L \tag{IV.2}$$

$$G \cap A = L \cap A \tag{IV.3}$$

$$AIGC = AGI \tag{IV.4}$$

Q.E.D.

V. CONCLUSION

For life to be sustainable, it must be an open system and be able to dump entropy to the world. Likewise, an algorithmic life, or AGI, must be able to dump entropy to an algorithmic world[**?**], and that's why only large models can be large enough to contain a model of the world.

[1] C. E. Shannon, The Bell System Technical Journal **27**, 379 (1948).

[2] E. Schrödinger, *What is life? The physical aspect of the living cell and mind* (Cambridge university press Cambridge).