Hyper(tasks/computation)

Hypersurreal • 4 Dec 2023

I'm particularly interested in super/hyper/ultra tasks & hypercomputation / digital physics / virtual particles.

In Surreal Time & Ultratasks, some interesting ideas are presented:

> If we instead take the surreal numbers as a model of time, then not only are hypertasks possible but so is an ultratask (a sequence which includes one task done for each ordinal number—thus a proper class of them). We argue that the surreal numbers are in some respects a better model of the temporal continuum than the real numbers as defined in mainstream mathematics, and that surreal time and hypertasks are mathematically possible.

This is *similar* to what I have been thinking about regarding tiny time, however for that model we use games (pseudo#s).

Day Zero Ultratask

> For each ordinal α, an α-task could be done in a finite-length interval of moment-less time so long as the interval contains an α-length sequence of pairwise non-overlapping subintervals. Perhaps there is a pointless analog of the system of surreal numbers, along with other pointless continua that contain infinitesimal intervals.

We have $+_0 = \uparrow$ & $+_{on} = tiny$. So we can (at least *in theory*) have an $\mathbb{On}$ length sequence on day 0 (maybe w/ $over = \{|over\}$ as the "event horizon" of Day 1 🤔).

In Hypercomputation: computing more than the Turing machine they present a figure (7 - pg.31) which looks identical to the game tree for $over = \{0|over\}$ 👀

I was also thinking about ***loop(y) time*** again, this *time* inspired by affine games (they give other forms born on Day 0 besides 0!). We could have a game tree w/ 0 as the root & on/off as the first steps. Maybe on/off can be seen as types of ultratasks (maybe every loopy game can) 🤷‍♀️