Avatar Univalence

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In this paper I introduce an L-system which might be used to find higher order mathematical theories.

Avatar Univalence builds on Avatar Schema Theory[1] with the distinction between Inside and Outside theories. It is part of the abstract framework Avatar Extensions[2] for Path Semantics[3].

The grammar consist of 3 symbols `/`, `~` and ` ` (space). It is parsed from left to right in prefix notation[4]. Nodes are separated by ` ` (space). Two sequential symbols without space represents leafs.

There are 4 valid initial conditions, representing 4 abstract mathematical ideas:

/ ~~	The core axiom of Path Semantics
~ ~~	Homotopy
/ /~	Inside univalence
~ /~	Outside univalence

There are 2 valid rules applied in parallel as an L-system[5]. The rules are chosen uniformly (unmixed):

/~ => / ~~ ~ ~~	Inserting the core axiom of Path Semantics (termination)
/~ => / /~ ~ /~	Inserting inside and outside univalence (higher dimensional continuation)

The symbol `/` might be interpreted as discrete change or some directional morphism.

The symbol `~` might be interpreted as continuous change or some isomorphism.

References:

[1] “Avatar Schema Theory”
Sven Nilsen, 2021
https://github.com/advancedresearch/path_semantics/blob/master/papers-wip/avatar-schema-theory.pdf

[2] “Avatar Extensions”
AdvancedResearch – Summary page on Avatar Extensions
https://advancedresearch.github.io/avatar-extensions/summary.html

[3] “Path Semantics”
AdvancedResearch
https://github.com/advancedresearch/path_semantics

[4] “Polish notation”
Wikipedia
https://en.wikipedia.org/wiki/Polish_notation

[5] “L-system”
Wikipedia
https://en.wikipedia.org/wiki/L-system