

A categorical (fixed point) foundation for cognition: (adjoint) corecursion

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Abstract: Computationalism has been the pre-eminent framework for models of mind, since the cognitive revolution. However, the plethora of apparently incommensurate approaches seems to undermine hope for a common computational foundation. Category theory provides a mathematically rigorous foundation for computation that includes recursion and corecursion. We show that corecursion unifies various cognitive behaviours for comparison and contrast in a principled and novel way. For instance, Chomsky's merge function is a universal morphism, which has a dual, called comerge. One implication of this work is that corecursion appears to be the rule rather than the (human) exception in contrast to Chomsky's view of recursion.