Self-reproducing Pushdown Transducers

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Abstract: After a translation of an input string, x, to an output string, y, a self-reproducing pushdown transducer can make a self-reproducing step during which it moves y to its input tape and translates it again. In this self-reproducing way, it can repeat the translation n-times for any $n \geq 1$. This paper demonstrates that every recursively enumerable language can be characterized by the domain of the translation obtained from a self-reproducing pushdown transducer that repeats its translation no more than three times.