6.836 Embodied Intelligence, 2002

Research Assignment 5 (3 hours)

Issued April 12; Due April 26

Essay question:

Discuss the issues in designing a cellular automata rule that would support self-replication of at least one structure without a substructure which is both interpreted and copied (i.e., without the central dogma of molecular biology).

References

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[5] J. von Neumann. The general and logical theory of automata. In L.A. Jeffress, editor, *Cerebral Mechanisms in Behavior-The Hixon Symposium*, pages 1–31. John Wiley & Sons, New York, NY, 1951.

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[7] J. von Neumann. The theory of automata: Construction, reproduction, homogeneity. In A. W. Burks, editor, *Theory of Self-Reproducing Automata [by] John von Neumann*, pages 89–250. University of Illinois Press, 1966. Based on an unfinished manuscript by von Neumann. Edited for publication by A.W.Burks.