Artificial Life at Scale? Lessons from Machine Learning

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Keynote Abstract

Life as we know it can be viewed from different scales of evolution: interactions of carbon-based molecules to produce cellular organisms, replication and self-organization of cellular organisms to produce animals with brains, social behavior between groups of individuals to form civilizations — with each development facilitating the scaling of a simple set of building blocks that eventually produce highly sophisticated systems. In parallel, due to the quasi incremental nature of its progress, the modern development of machine learning shares certain similarities to the evolution of life forms. Machine learning progress often involves the scaling of a simple set of algorithms to eventually powerful statistical models that are highly expressive. In this talk, I will first discuss and analyze the advances of machine learning from the perspective of an artificial life form. I will detail the lessons learned from success and failures of its development, and share some of my thoughts on what we can expect from applying such computational scaling experiments to the field of artificial life.

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