Review of SEDRo: A Simulated Environment for Developmental Robotics

This paper introduces work that is being done to create an AI system which improves on the shortcomings of many other related papers. The issues mentioned in the paper are the following: targeting a single skill rather than diverse skills, use of refined and focused datasets instead of diverse and noisy datasets, relying on explicit rewards instead of other mechanisms, and too many necessary components rather than a sufficient set of learning mechanisms. The authors also go into detail for each point to explain why it is important to stray away from these practices in the development of HLAI.

In practice, SEDRo is an environment in which a virtual infant interacts with a virtual mother from the stage of a fetus to 12 months old. It is very practical that a simulated environment is used here instead of a real environment as there is not nearly enough time or data to train such an agent in the real world. The authors mention many aspects of the infant that are developed in the first 12-18 months to show the complexity and wide domain in which the system aims to consider.

The primary limitation that I have found in this paper are that the interaction between the infant and the mother will not have sufficient bidirectional communication as should be necessary for the growth of a human infant. This is partially mentioned in the paper, but it is important to show that the primary limitations will stem from the interaction between the two agents. This can be improved upon by using an agent with a wide range of interactions and responses. To make such an agent it would be important to look at how humans typically interact with infants and focus on interactions that support healthy growth. This can be done

using videos as data and using systems similar to the grounded language modelling paper to transform sentences conveying actions or videos displaying actions into real actions taken by the parental agent.