Binary Synthesis: Applying Philosophical Principles to Artificial Neural Networks

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As machine learning becomes increasingly important across all fields which process data, it is necessary to investigate new models of machine learning. The goal of this project is to create a software framework which effectively incorporates the principles of Binary Synthesis, a modified Hegelian Dialectic, into the calculations of an Artificial Neural Network. As Hegelian logic can aid humans in philosophical pattern recognition, it is possible that it can aid Artificial Neural Networks in pattern recognition. The primary design criteria for the prototype was to meet or surpass Artificial Neural Networks. The variables for measuring this included training time in seconds, model accuracy in percentage of correctly identified images, and model efficiency in training sample size. Notable prototypes include those based on the philosophies of Socrates, Aristotle, and Hegel. The Socratic network developed antitheses networks which, on average, shared 40.2% of original thesis errors. Normal processes generated networks which shared an average of 81.9% of original thesis errors. The Aristotle network, given Socratic inputs, increased accuracy by an average of 0.7%. The Hegelian network was unable to complete tests due to excessively long processing times. While the Aristotle network was capable of slight optimization, it was unable to surpass the efficiency of neural networks in training time or accuracy given the same training sample. The accuracy of Binary Synthesis remains undetermined due to a lack of adequate modeling. Future development should focus on the accuracy of the representation of Socratic dialogues, Hegelian synthesis, and Binary Synthesis paradoxes.

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