Reproducibility problems of artificial intelligence inherently come from random numbers

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Matthew Hutson wrote an article entitled "Has artificial intelligence become alchemy?" (1). Matthew only focused on deep learning as artificial intelligence. There are two kinds of artificial intelligence: deductive reasoning and inductive reasoning. Deep learning is classified into inductive reasoning, stochastic reasoning, or statistical reasoning. Since stochastic (statistical) reasoning schemes are all based on random numbers, generating random numbers are to change the result of deep learning. Deductive reasoning schemes do not use random numbers so that the reproducibility problem does not exist. Many of artificial intelligence researchers are not aware of the importance of a random number seed. Before running an artificial intelligence (deep learning) program, the random number seed should be fixed. Without fixing the random number seed, the result may be changed. In other words, the reproducibility problems of the artificial intelligence (deep learning) can be fixed.

References:
1. Matthew Hutson, Has artificial intelligence become alchemy?, Science 04 May 2018: Vol. 360, Issue 6388, pp. 478