Do not confuse pseudorandom number and true physical random number

Yoshiyasu Takefuji

Sophia Chen wrote an article on a new web-based beacons service by several governments including Chile, US, and Brazil (1). As she mentioned, there are two kinds of random number generators including a predictable generator based on computational algorithms and a real generator using random physical phenomena (1). The first method is called a pseudorandom number generator, the second method a true physical random number generator. The pseudorandom number has been used in many applications including machine learning where a seed plays a key role in random number generation. Without fixing the random number seed, the result may be changed which can cause a reproducibility problem (2,3). The reproducibility problem of the artificial intelligence including machine learning (deep learning) can be fixed by the fixed seed (3). Using true physical random number, we always have to face the reproducibility problem in stochastic methods including machine learning. Therefore, we must understand the difference between pseudorandom number and true physical random number.

References:
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2. http://science.sciencemag.org/content/360/6388/478
3. http://science.sciencemag.org/content/360/6388/478/tab-e-letters