Effectiveness of T-Consciousness Fields on Dispersion Index and Entropy of Generated Random Number Distributions

Mohammad Ali Taheri[1], Farzad Ahmadkhanlou[2*], Reyhaneh Mahlouji[3]

* Corresponding author: Farzad Ahmadkhanlou
Email: farzadkhanlou@hotmail.com

1- ScienceFact Research and Development Department, CosmoIntel Research Center, Ontario, Canada
2- Aerospace and Mechanical Engineering Group, University of California Irvine, Irvine, California, United States
3- PhD in applied physics, Cosmointel researcher

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Abstract

The effectiveness of T-Consciousness Fields (TCFs) on matter and energy and their subdivisions has been previously examined in various studies. The impact of these fields in the context of computer computations introduces a novel area of research. To initiate, the generation of random numbers using Monte Carlo computations has been selected for investigations, as these computations are fundamental and essential in such simulations. Random numbers generated by different computer programs are pseudo-random and use a defined mathematical formula. Such numbers create a distribution that depends on the initially chosen random number, which can also be random itself. The uniformity of the distributions can be slightly changed by minor hardware and software details of the generating system. In this study, random numbers are generated in different hardware systems (desktop and laptop) and various software environments (Linux and Windows operating systems, C++ and Fortran programming languages). The corresponding distributions were exposed to TCF1 and TCF2, to examine the impact of such non-physical fields on the most fundamental level of Monte Carlo computations and the generation of random numbers. Based on the results obtained, it can be concluded that TCFs influence computer computations and the generation of random numbers (manifested in different values and forms). The results show a change in the mean and median parameters of the populations exposed to TCFs, with a tendency towards values less than 0.5 (for random numbers generated between zero and one), indicating a change in the distribution of the generated numbers. This susceptibility was observed to be more favorable in the desktop system, Linux operating system, and C++ programming language, with a more repeatable trend than the mentioned indicators under investigation, compared to the laptop system used.

Keywords: T-Consciousness Fields, Random Numbers, Distribution, Monte Carlo

Introduction

At the core of the Monte Carlo method, which is used in computational simulations, random number generators reside [1]. These random number generators in non-quantum computational spaces are entirely pseudo-random, in the sense that they use a specific mathematical formula to generate random numbers. This formula can arbitrarily use a previously generated random number to produce a new random number. While appearing pseudo-random, this follows a known formulation and creates an expected range of changes in the sample space of random numbers and computational results.

In various programs where Monte Carlo computations are used, there is always an effort to address factors that could negatively affect the level of randomness and, consequently, the desired output of the system [2]. The range of fluctuations and variations in generating random numbers using Monte Carlo computations provides a platform for tracking any factor that can influence these fluctuations. Constraints on the cache memory size, the temperature of a computer system, or even minor alterations in the circuits supplying electricity to computational components or other electronic components are some examples of the factors that can influence these fluctuations. Although these changes may fall within the margins accepted for calculation errors, they are still identifiable by examining the repeatable trend and somewhat signal-like behavior in the increasingly random and stochastic background.

Method

To generate random numbers, two different computers were used: a laptop (LP) and a desktop (D) computer, together with two operating systems: Windows (W) and Linux (L). In addition, two programming languages, Fortran (F) and C++, were employed (further details are provided in the Methods section 1-2-2).

- Laptop hardware specifications - CPU: Intel(R) Core(TM) i5, 2.67 GHz; RAM: 4.00 GB. L1/L2 Cache: 512 kB/3 MB

- Desktop hardware specifications - CPU: Intel(R) Core(TM) i7-4770, 3.40 GHz; RAM: 16.00 GB. L1/L2 Cache: 1 MB/8 MB

In this study, the mean and median values obtained from the actual distribution of randomly generated numbers were compared across different categories. The comparisons were performed for 10 repetitions in each group of study, using an equal binning of 0.05. The entropy of the obtained distributions was also compared under similar binning conditions. The comparisons were made for three groups (Control, TCF1, TCF2) and for the two utilized systems (D and LP), wherein the four defined combinations of Linux and C++ language (LC), Linux and Fortran language (LF), Windows and C++ language (WC), Windows and Fortran language (WF) were considered. For comprehensive data analysis, color-coded 2D contour plots were generated in the two modes of absolute and normalized, and for all the eight categories (4 D and 4 LP categories)

Results

Desktop (D)

In this section, the values of the random numbers generated by system D on two different operating systems and two different software programs are investigated. Figure 1 shows the color-coded 2D contour plots of the mean, median, and Shannon Entropy values for the randomly generated numbers in system D. As can be seen, there are some differences in the mean and median of the generated values when comparing the control and the samples, and when comparing the defined combinations of LC, LF, WC, and WF. The mean and median parameters for sample 1 and sample 2 show an overall decreasing trend towards values less than 0.5 with respect to the control. However, for the LF in sample 2, a contrary behavior to this trend can be observed. As far as Shannon entropy is

considered, a decreasing trend is seen, with the exception of WC combination in sample 2.

Laptop (LP)

Figure 2 shows the obtained results for the laptop system (LP). A decreasing trend in the mean values from control to sample 1 can be observed. However, there is no significant

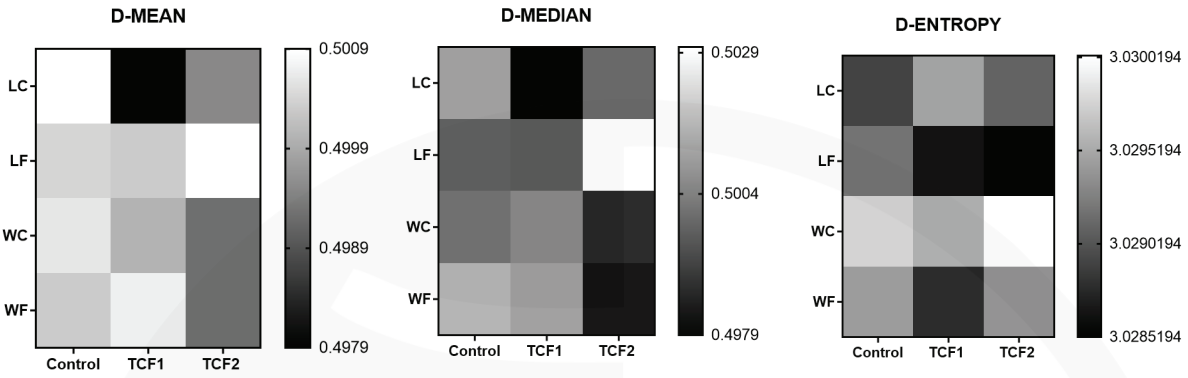

Figure 1 - Investigating changes in the mean and median of the population of random numbers generated in comparison between control and samples in various study states in the Desktop system, along with the comparison of Shannon entropy across the whole range.

WF:Windows-Fortran- - LF: Linux-Fortran- WC: Windows-C++ LC: Linux-C++

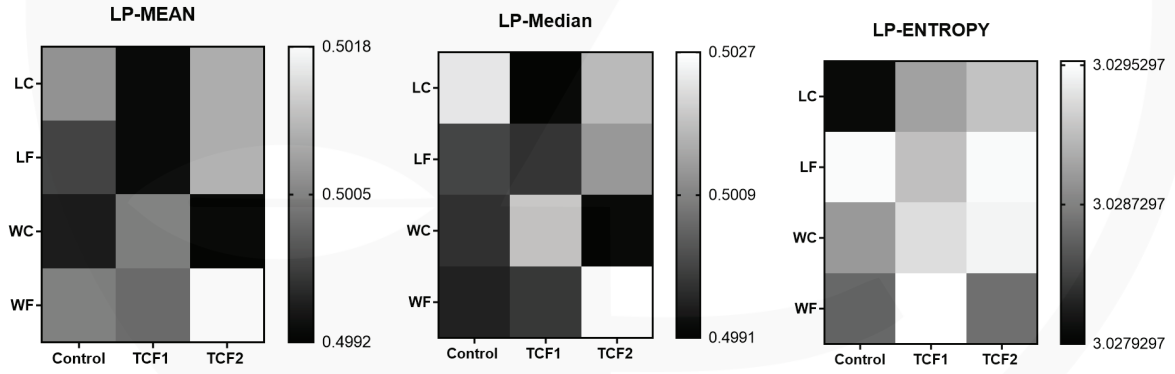

Figure 2 - Investigating changes in the mean and median of the population of random numbers generated in comparison between control and samples in various study states in the laptop system, along with comparison of Shannon entropy across the whole range.

WF:Windows-Fortran- - LF: Linux-Fortran- WC: Windows-C++ LC: Linux-C++

difference between the median value of sample 1 and that of the control. As far as sample 2 is considered, the changes in the median and mean values show different responses, depending on the scenario, and do not follow a specific trend. Regarding the Shannon entropy, a relative increase in the values across the populations of different categories can be observed (as compared to the control), which is in contrast with the response of system D.

Conclusions

The results of this study demonstrate an overall shift in the median and mean parameters of the samples towards values less than 0.5, indicating a change in the distribution of the randomly generated numbers. This conclusion, which is evident in the 2D contour plots, is observed in both of the studied systems and the corresponding data derived from each operating system and the software programs used. While variations in values within populations are present, the predominantly observed trend follows the aforementioned pattern (tendency to values less than 0.5). The results obtained from this section highlight that the populations of randomly generated numbers are susceptible to the application of T-Consciousness fields. Among the different studied cases, the susceptibility observed in the desktop system, Linux OS, and C++ programming language was more consistent than in the laptop system. Based on the factors investigated, this behavior was more favorable.

In the following sections, the study is being continued using the same desktop system and operating systems as well as the same software program.

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