

## Generate Adaptive Quasi-Random Numbers

---

O. Kesemen<sup>1</sup> and N. Jabbari<sup>1</sup>

<sup>1</sup>Department of Statistics and Computer Science, Faculty of Science

Karadeniz Technical University, 61080 Trabzon, Turkey

okesemen@gmail.com, nasim.jabbari@gmail.com

### Abstract

Random number generation, especially with the development of computer technology has an important place in the world of it. Uniform distribution random number generation can be done in almost all programming languages. Also in other distributions number generation can be produced with the help of the generated number from uniform distribution [1]. Games, education and simulation such as applications programs which frequently used random number generation, is produced in the form of discrete data. Sometimes random numbers generation produced with the same values observe consecutive. In most applications (such as education) to purify this effect we can reused the resulting number again. But it reduces the amount of numbers, the random number will be in facilitates prediction.

Indeed, as it reduced the probability of the taken number at the same time for making the prediction of the next number difficult, variable produced random numbers with their probability [2].

The frequency of region of each generated random number ( $f_i$ ) are stored in an increase. The next random number which be generated, if it selected in each region, that number is considered to be the number. In this method, because of the equal intervals of the numbers they have equal probability. The aim here is to reduce the probability of selecting the same number. In this case, the interval between the numbers must be narrowed. The process of increasing of the probability of narrowing the interval transferred to other numbers. In this case, interval's limits will be changed.

In statistical simulations, deviations from randomness is be reduced by taking too much random numbers. In this work, reduction of the amount of deviation, a set of data as a result of simulation provides an approach theoretical curve more rapidly. Thus simulation results can be reached with less data. This provides a reduction of the computing time.

**Keywords:** *Adaptive Quasi Random Number, Statistical Simulation*

### References

- [1] Kobayashi, H., Mark, B.L. and Turin, W., Probability, Random Processes, and Statistical Analysis, Cambridge University Press, 2012
  - [2] Morokoff, W. J. and Caflich, R. E., Quasi-Random Sequences And Their Discrepancies, Vol. 6 (15) 1251-1279, SIAM Journal of Science Computing, 1994.
-