

2018 年臺灣國際科學展覽會 優勝作品專輯

作品編號	190014
參展科別	電腦科學與資訊工程
作品名稱	Random number generators and their applications in Computer Science with the Monte Carlo Method
得獎獎項	二等獎
國 家	Switzerland
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Abstract

Monte Carlo methods are non-parametric algorithms that use random numbers and theorems of probability theory to approximate values that are not random.

The purpose of my research was to approximate the surface of different geographical areas that can be easily approximated to polygons (e.g. lakes, glaciers, deserts) with Monte Carlo simulations starting from either Cartesian coordinates or pictures.

Computer science would not exist without math, and this research project showed me the importance of a deep understanding of probability theory in the world of simulations and, more generally, the importance of developing new theorems and algorithms. The results of my research could be developed in different ways: it would be interesting to produce software that allows one to approximate areas from pictures taken from a smartphone; as well, the theorem I found has to be proven, and also Monte Carlo methods as a means of random number generation can always be improved. There are still many possibilities.

【評語】 190014

Good theoretical research work with experiment to demonstrate practical usage.

Mathematical proof on the correctness equation used should be provided.