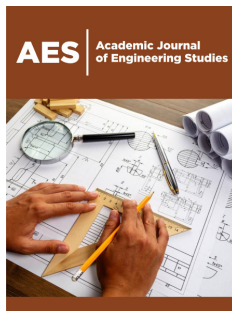# Computer's Simulation Teaching Colors' Names, Demonstrating the AI Technique

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Abstract

The subject in question belongs to the field of visual literacy. The article shows how to teach a computer color names and differentiation in subtle resolutions in the color shades, and in professional language - the chromatic, for example yellow color can appear in different shades, human eye is sensitive to some of the above shades. The article includes the color composition of the three primary RGB colors (red, green, blue) consisting of three integers in the interval [0-255]. A computerized learning system uses artificial intelligence methods - called "Deep learning". The expert "grills" colors and calls the color by its name, which is registered in the database of the system. The expert thus teaches the computer of about 1000 colors out of 16,777,216 (256^3) shades that can be represented in computer monitors, that are accepted today. With the help of 1000 random color demonstrations, the computer will be able to differentiate colors in the later tests and identify colors, even if it is rarer, such as: "Khaki", "Cream", etc.

Keywords: Rainbow colors; RGB; Simulation; Deep learning

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Introduction

The step of testing the computer's proficiency in color recognition is done by a color generator that tests the computer's knowledge of color recognition. The comparison in computer learning and child learning: The learning methodology is identical in both cases: the learning step consists of presenting the color to the object (child/machine) and naming the color. The main differences are:

A.   It is enough for the computer to perform one learning step per color, and the child has to perform several learning steps so that the color is comprehended in the memory of the object.

B.   The computer is consistent in its learning-deterministic (in its current version), the child can change his mind from time to time in color perception [1-4].

C.   The child is able to understand the meaning of the color term and learn its shades casually, by receiving a collection of sentences that discuss colors accompanied by illustrations, or by playing with colored objects - such as toys. The child finds the common denominator of a group of objects, say color, and from this learns the meaning of the term color. The simulator can also simulate this operation. The computer can detect in the training phase the degree of freedom in color recognition, the tolerance. And in the identification phase he will know how to recognize a color even if the shade, represented by the three values indicating the intensity of the three basic colors was not one of the shades collected database, which the computer encountered in the training phase, but was in the range of colors learned and rated in the same color class.