

Color Wheel System for Unifying Color Frames and Designing High-Rate LCD

 Communications & Information

 Energy & Environment

 Manufacturing

Buildings and Construction Technology

Consumer Electronics

Digital Broadcasting, Telecommunication and Optoelectronics

Smart Mobility and Electric Vehicle

Opportunity

The current color frames indicate that all light colors are generated from red, green, and blue called RGB, and pigment-color structure are from Cyan, Magenta, Yellow, Key black called CMYK. Other color frames such as HSV (Hue, Saturation, Value) are derived from RGB and CMYK. Letter-based color codes of RGB and CMYK systems require a large range of values to represent different colors and lack the capacity for inter-changeability and arithmetic manipulations. This study presents a universal color system using a number-based structure to encode, compute, and unify colors on a color wheel.

Technology

We present a new color framework C235 based on the prime number theory and Goldbach's conjecture to encode colors and colorize objects. The C235 color system uses the first three prime numbers 2, 3, and 5 to represent red, green, and blue, respectively. Consequently, code $\langle 6 \rangle = \langle 2 \times 3 \rangle$ is for yellow (Y), code $\langle 15 \rangle = \langle 3 \times 5 \rangle$ is for cyan (C), code $\langle 18 \rangle = \langle 3 \times 6 \rangle$ is for yellow-green (YG), and code $\langle 45 \rangle = \langle 3 \times 15 \rangle$ is for cyan-green (CG). A color in the C235 system is also associated with a grey level for its lightness/thickness. Since $\langle 30 \rangle = \langle 2 \times 3 \times 5 \rangle$ represents a white light, we use the powers of 30 to indicate the greyness levels. General rule is that a higher power means darker/thicker color.

Advantages

- Rich in color presentations, more so than the existing display products
- Short response time for presenting the subject's desired appearance in color and tremendous energy saving in presenting
- Easy to incorporate the patented technology through software
- Applicable widely in industrial design, fashion business, LCD display

Applications

- TV and LCD manufacturers
- Fashion businesses

Remarks

1. International Exhibition of Inventions of Geneva (IEIG) 2024 - Gold Medals with Congratulations of the Jury
2. International Exhibition of Inventions of Geneva (IEIG) 2024 - Special Award

IP Status

Patent granted



Technology Readiness Level (TRL) 

3

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Develop
Concept

Proof
Concept

Follow-on
Funding

Build Value

- Movie businesses
- Industrial design
- Automobile industry

