



# The Scientific Art of Computer Programming

By:  
Nando  
Decima

# Computer Programming

## Range of occupations include:

- Software developer, web developer, mobile applications developer, embedded firmware developer, software engineer, computer scientist, software analyst
- Computer programmers write, test, debug, and maintain the detailed instructions, called computer programs

Video Games, Web Design, Program Development, Statistics, Military, Hospitals



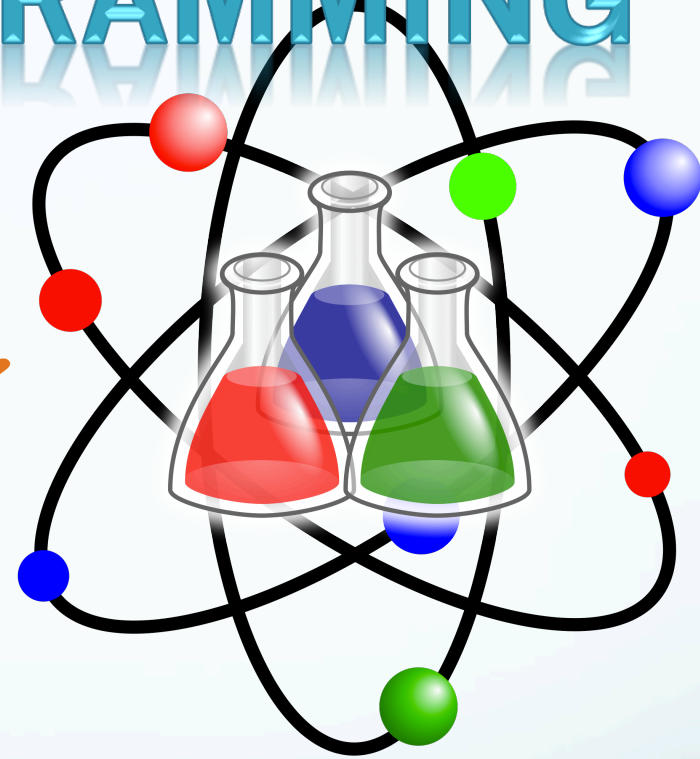


IS  
COMPUTER PROGRAMMING  
AN



*ART*

OR



**SCIENCE**

# Knuth: Computer Programming as an Art



## **Association for Computing Machinery**

"If computer programming is to become an important part of computer research and development, a transition of programming from an art to a disciplined science must be effected."



# Science vs. Art

-Latin root of the word art; ars, artis meaning "skill."

## Left brain

I am the left brain.  
I am a scientist. A mathematician.  
I love the familiar. I categorize. I am accurate. I listen.  
Analytical. Strategic. I am practical.  
Always in control. A master of words and language.  
Realistic. I calculate equations and play with numbers.  
I am order. I am logic.  
I know exactly who I am.

## Right brain

I am the right brain.  
I am creativity. A free spirit. I am passion.  
Yearning. Sensuality. I am the sound of roaring laughter.  
I am taste. The feeling of sand beneath bare feet.  
I am movement. Vivid colors.  
I am the urge to paint on an empty canvas.  
I am boundless imagination. Art. Poetry. I sense. I feel.  
I am everything I wanted to be.

-The word "science" seems to have been used for many years in about the same sense as "art"; for example, people spoke also of the seven liberal sciences

# Science & Art

- Computer programming is by now both a science and an art

s c i e n c e

wonder

a r t

Donald Knuth:

My feeling is that when we prepare a program, it can be like composing poetry or music; as Andrei Ershov has said [9], programming can give us both intellectual and emotional satisfaction, because it is a real achievement to master complexity and to establish a system of consistent rules.



# Summary

“We have seen that computer programming is an art, because it applies accumulated knowledge to the world, because it requires skill and ingenuity, and especially because it produces objects of beauty. A programmer who subconsciously views himself as an artist will enjoy what he does and will do it better. Therefore we can be glad that people who lecture at computer conferences speak about the state of the Art.”



# Robert Henke

L U M I E R E

<http://www.roberthenke.com/>

<https://vimeo.com/93854894>

Audiovisual installation

Creator of Ableton





# Robert Henke



# Norimichi Hirawaka

The Indivisible (Prototype No. 1) (2015)

Three rules governing her exploration:

1. To let a computer program do a meaningful calculation.
2. To depict only by using numerical values that appear in a calculation process.
3. (However) Do not represent a calculation object as object itself.

-create highly imaginative installations that immerse the viewers into process-based environments.

Hirakawa is interested in exploring the physical manifestation of information where data defies comprehension.



# Norimichi Hirawaka

<https://vimeo.com/141908159>

<https://anti-utopias.com/art/norimichi-hirakawa->  
[installation /](#)

