

The Way I See Things: An Engineer's Perspective
(with thoughts on SE in the AI Era)

Kyochul Kang

(kck@postech.ac.kr)

Professor Emeritus, POSTECH, Korea

I am an engineer. What engineers do is creating "things."
The thing I create is software. But, engineers are not the only ones who create "things"; artists, craftsmen, and writers also do. I argue in my talk that the engineering principles I learned in software engineering can also be applied in other fields of creation.

Design is a creational activity. Design is the process of reducing the degree of design freedom, i.e., the space of design choices by continuously making design decisions. Prior decisions impose constraints on subsequent choices. Therefore, the first design decision, the "first line" we draw on a design sheet (often, architectural decisions) is most important. Designing is the process of refinement, adding details considering quality attributes that may be emotional, aesthetic, and/or engineering. It is my observation that artists and writers, they all create "things" as we software engineers "create" software. They do top-down refinement, create

patterns and apply them with variations, as we software engineers do.

Interestingly, the engineering principles we apply were already discussed two thousand years ago. The concept of six characteristics of the world in the Avatamsaka Sutra is a core philosophy of Huayan Buddhism. I will discuss how this concept is related to software engineering principles.

Whether we like it or not, we live in the era of generative-AI. Much of programming can now be done by AI. I like to share my thoughts on areas where software engineering researches are needed.