An Information System is Discrete

For simple, I will consider an information system for now just as a normal computer liking the one that most of us is
using now. And I'd like to show in the following chapters that this system may be absolutely discrete.

My core suppose is that finite integers can't construct a real number.

I will talk about why I think so in the next chapter.
In the third chapter I will discuss the measurement.
At the least is the conclusion and outlook.

A Real Number Can't be Constructed by Finite Integers

The book *Principles of Mathematical Analysis* wrote by Walter Rudin
shows a process of constructing the set of real numbers from the set of real numbers,
which is equivalent to the integers set.

In that process, we need infinite subsets of Q to construct a real number,
for which we need of course infinite integers.

With it, I come out perceptual the idea, that we can't construct a real number with finite integers.

And in the real world, there is no infinite integers in a computer or (maybe) our brains.
So if my suppose is correct, there is no way to construct a real number in a computer or brains,
not to say a whole system of real numbers.

The Measurement is Discrete

let's suppose that we want to measure a random real number,
and in case to measure, we need an information channel from the number to the cognition.

As there is a limit for the capacity of an information channel,
we can only get an information which consists by finite integers.

So, if my suppose is correct, we can never get the complete information of a real number.

Conclusion and Outlook

The computer system what we are using is undoubtedly discrete,
and it may be so forever in the future.

I think we should accept what it is
and analysis it's behavior, such as the deep learning network, from a discrete perspective.