Special Theory of Everything: Application to Algorithms, Generating Ideas, and Artificial Intelligence

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Abstract

In this paper, the Special Theory of Everything is introduced. It is based on the new concepts of information field, information points, and information functions. This article also reviews possible applications of this theory to some famous problems such as Cat Paradox by Schrodinger or the problem of human and God origin. Possible findings with the help of this theory and the example of password checking algorithm improvements are described. Insights from this theory in the field of Artificial Intelligence are also briefly presented.

Keywords: Special Theory of Everything, Information Points, Artificial Intelligence, Paradox, Algorithms, Ideas

Highlights

- Everything consists of information field, information field consists of information points, Everything has an endless quantity of information points and is nothing more than information point from this endless quantity.
- Information function is a relation between two or more information points that can produce any number of information points.
- ‘God’ is the information point that created everything axiomatically. The exact and basic similarity between God and human beings is found and it can be seen as the ability to create information points in the information field.
- It is impossible to observe a sun ray reflection in the sea waves without an observer, but it exists as the information point when we name it, so it does not exist until seen or named by the other information point.
- Artificial intelligence can also create information points. So, there is no importance if the machine can think or not, it is more significant what information points machines can create.

1. Introduction

It is known that scientists work on describing universe processes using applied mathematics. One of the most intriguing problems that is not fully described yet is the Theory of Everything. Scientists from different places and times consolidated their efforts to describe everything in one fundamental theory that can be seen as a mathematical model filled with some equations and laws that are understandable in terms of modern mathematics. For instance, teaching Artificial Intelligence everything requires at least the Theory of Everything that will be taught including God, Religion, and Human origin, paradoxes, etc.

On the other hand, the history of science has shown that the most interesting and significant progress was achieved by revolutionary changes in mathematics. A good example is differential equations that were introduced to the world by Newton and Leibniz. In Chapter 2 of Isaac Newton’s work (written between 1664 and 1671) called ‘Methodus fluxionum et Serierum Infinitarum’, he listed three kinds of differential equations that significantly changed the understanding of the fundamental Universe Laws.

It is also known that it is impossible to describe mathematically and precisely any tree on the planet. There is no theory that could accomplish this mission. As a reasonable effort, the mathematics of fractals (Mandelbrot, 1983, Falconer, 2003) can be considered, but still it is too far from being 100% precise. To describe a tree or any other natural process precisely mathematics should be changed significantly. Modern mathematics is based on numbers. Numbers stand behind almost every mathematical law or theory, which describes any natural process. They can be considered as a basis of modern mathematics and modelling. The numbers were good when the shepherd needed to count his sheep, but it is obvious that they are not capable of describing a tree or any other natural process precisely because there are too many things in the Universe that can not be counted.

In fact, modern mathematics is able to make operations with infinity by means of lemniscate introduced by John Wallis (J. F. Scott, 1981), but it is certainly also not enough to describe a simple tree. Reasonable progress in mathematics was achieved by inventing functions and operations with different forms of variables. However, the precise description of a tree still remains unsolved by modern mathematics, because it has no list of equations or formulas describing a simple tree 100% precisely. On the other hand, we describe a tree in modern language without any problems. At least most people can differentiate a tree from a car. To describe a tree precisely or any other natural process, the mathematical basis that consistently leads us to numbers needs to be changed.

In this article, a new mathematical basis is suggested instead of numbers, which led to the creation of the theory that can describe everything. Possible assumptions, axioms, and applications of this theory are also introduced. Of course, some ideas from this article can look arguable, but we remember that almost every paradigm changing idea in science was not accepted from the very beginning, in fact, some of the most significant ideas were refused by scientific society at the start.

2. Information field and information point

The first assumption to be made is that everything consists of information. Let us assume that Everything is an Information Space of all possible and impossible Information Spaces. Information is everything that surrounds human beings and human beings can also be seen as information. Let us call it the information field. The second assumption is that this information field consists of the information points.

These information points are naturally much wider than the points that were defined by Euclid in his textbook called 'The Elements' or Tarski, or Whitehead, Nicod, de Laguna, Menger, (Clarke, Bowman, 1985). They can also be formulas, operators from boolean algebra, theories, ideas or concepts, and of course they do have parts and certainly they have not only numbers or coordinates as their parameter, all they have an endless number of other information points to which they can be connected.

The information point is a concept in the field of information. Any concept that can be described in any way. Trousers, tea, pens, algebra, equations, geometry, hats, dogs, trees, sons or suns, daughters, love, infinity, science, numbers, philosophy, or any other concept you can imagine is the information point in the information field. It is obvious that a great number of information points that we know including those which we do not know, are nothing more than one simple information point called 'Everything'. The famous Russell-Zermelo Paradox (Irvine, Andrew David and Deutsch, Harry, 2016) can be understood better from the information point side here. And this paradox is nothing more than another information point as well as a naive set theory and any other theory we can imagine.

3. Information function

Let us create one more concept and call it 'information function'. Information function is much wider than the ordinary function well known in mathematics, starting from Gottfried Leibniz letters to Johan Bernoulli in 1673 or sign suggested by Alexis Claude Clairaut and

Leonhard Euler in 1734. The modern concept of function in mathematics describes it as ‘relation between the input set of points and the set of permissible output points with the property that each input is related to exactly one output’ (CTI Reviews, 2016). **Information function** is a relation between two or more information points that can produce any number of information points. Of course, information function is the information point at the same time as any other concept or idea in the Universe.

In ordinary mathematics, we have three classes describing the manner in which arguments (input points from the domain) correspond to images (output points from codomain): **injection**, **surjection**, and **bijection** that are coined to Bourbaki group. Of course, these three are not enough to describe all relations between information points by means of information functions. To describe everything, we need to create *autoinjection* prior to others. Information function can be called *autoinjective* if the output information point is the information point from the set of inputs. This means nothing more than the fact that the whole image codomain can be a simple point from the input domain. The information point called ‘Everything’ can serve as a good example. ‘Everything’ is a set that consists of an infinite number of information points, but at the same time it is nothing more than a simple information point of this set called ‘Everything’.

4. The Special Theory of Everything and some answers it can give

Information field and information points can describe absolutely everything that we know and even the things we are not aware of. In fact, the things that we are not aware of are nothing more than a simple information point called ‘the things we are not aware of’. Every information point is simple and complex at the same time. Every information point has got finite characteristics which we can count and infinity inside and outside it at the same time. These points are big and small, have got margins and endless, variable and constant, have got size, and do not have it at the same time. They can be absolutely anything we can imagine and of course they can exceed our imagination. This theory is as close to the reality we face as

possible, and it describes the reality in the manner homo sapiens perceive it. This is the theory of concepts and ideas (information points), the bricks from which the information field (everything) is built. That is why it can be considered as a theory of everything.

One of the most important questions the information field theory answers is the origin of everything. It is obvious that information points can originate from the information point only. It is also well known that we do not have a lot of information points that are able to produce other information points. The information point called 'homo sapiens' is capable of creating other information points, concepts and ideas. In fact, there is one more information point that is known as an information point capable of creating other information points. Some 'homo sapiens' call it 'God'. 'God' is the information point that created everything axiomatically. Here we come to the conclusion that the exact and basic similarity between God and human being is found and it can be seen as the ability to create information points in the information field. This information field theory answers also a question of God's creation. As we assume every concept or idea is an information point, the same assumption can be made for time. 'Time' is nothing more than an information point in the information field that is created by us, and it can have any unknown parameter every information point has. It exists everywhere and nowhere, it exists and does not exist at the same time. So as the 'Time' information point can have unknown parameters, the idea that God created Humans to give Humans a chance to create God, looks reasonable. Indeed, people created 'God' as an information point which created everything and they still keep working on His creation in Churches, Bible discussions, prayers, and in ordinary life.

One more extension from the information field theory that can be received is the understanding of the famous Shroedinger's cat paradox in quantum mechanics (Trimmer, 1980). In terms of this theory, the cat in the box does not exist until it is named or seen in that box by any other information point. This includes not only the observer and the other person who inserted that cat in the box but also includes the Shroedinger himself as a creator of this

paradox as an information point. Good illustration can be found during sunrise or sunset in the sea. It is impossible to observe a sun ray reflection in the sea waves without an observer, but it exists as the information point when we name it, so it does not exist until seen or named by the other information point. To go further, the information point does not exist until it is named by other information point.

5. Application to algorithms and ideas generation

One of the applications of this theory can be found in finding solutions for building better algorithms. For instance, in case of finding passwords, with the help of much more efficient algorithm than the brute-force. To find some original solutions, more information points can be taken into our consideration. Alan Turing in his article (1950) mentioned that a computer works as a machine that makes commands from a programme (reads symbols), step by step and we assume it describes in general modern central processor unit work and asks a question if a machine can think. In most algorithms a computer checks, if the password is correct, it compares it with the encrypted right answer. The processor compares the correct answer with the user input step by step, byte by byte. By brute force, the algorithm user inputs all possible variants to make the computer compare inputs with the right answer until the correct password is found. It is well known that in most cases, there are too many possible variants to check them all. With this information field theory the process of comparison can be described more precisely. Let us include the information point called 'Time' into the comparison of user's input passwords with the correct answer. In most cases, the computer checks the input symbols one by one and as it finds the first correct symbol, it goes to checking the second one. This means that the computer makes more operations after finding the first correct symbol.

Hence, the time for the comparison and clearly for the response will increase. If we assume that we theoretically are able to measure the time of the response made by the computer, we can write algorithms with much fewer variants than brute-force. Check the first symbol,

measure time, and if the time increases, then the first correct symbol is found, go to the input of two symbols changing only the second one, measure time, and if the time increases, then, the second correct symbol is found, go to the input of three symbols changing only the third one, and so on. To find the password with this algorithm, there are much fewer input variants needed than brute-force.

If we have got an 8 symbol password that consists of English alphabet letters and decimal numbers (62 possible inputs: 26 capital letters, 26 ordinary letters, and 10 numbers), then the number of possible input variants for brute force will be:

$$62^8 = 218340105584896$$

Time evaluating algorithm will reduce it to:

$$62 \cdot 8 = 496$$

Of course, time-protected algorithms can be created, they could make fake operations randomly during password check to hide the real response time, but they are not essential now because there is no physical opportunity to measure response time precisely enough and no opportunity to distinguish password checking process from other parallel tasks that the processor resolves. On the other hand, the experiment proving efficiency of time including algorithm, can be made in the modern computer era.

The Information point theory can be used in finding interesting ideas such as a virtual phone server called 'phone cloud' which allows every registered user to have any desirable phone on the cloud server backing up private information, settings or applications, it can also expand phone user opportunities by using server storage and processor capacity. Phones of the future may look like terminals with basic offline functions and significantly extended opportunities while connected to the cloud.

One more interesting idea which was received with the help of this theory is the idea of an international language based on music. Creating Esperanto was an interesting approach, but it is not very popular in the modern world. If we create a language based on the frequency of the sound differences (music) for a computer, it will not be a problem to write the algorithm for distinguishing frequency changes. Therefore it looks much easier to create and popularize such a language for computers and humans' international communication. One can start from two or three simple words combining two or three low and high notes which can be used by ordinary users instead of remote control they always tend to lose. It can be developed into a full international language based on computer understanding later.

Information point called 'QR Code' can be used effectively with bank cards facilitating their users' daily payments. It is significantly easier to protect clients from unauthorized money withdrawal than while having contactless credit cards in payment systems.

6. Application to artificial intelligence

Let us define artificial intelligence as an information point capable of creating other information points. As we know, artificial intelligence systems already create information points. The famous portrait 'Edmond de Belamy' created by the artificial intelligence system from French art collective called Obvious can serve as a good example. The system not only creates its own portraits, but also compares them to ones made by humans and stops when its internal algorithm says to it that they are comparable enough. Thus, artificial intelligence systems can already stand in one row with human beings and God Himself, but the importance and significance and the quality of the information points created by artificial intelligence can be discussed more.

The first thing we need to understand is that we will not create a 100% copy of a human intellect because we cannot define a human intellect that precisely. We can copy some functions of the intellect we know that are already defined as information points. Second, we

need to find the purpose of creating an artificial intelligence system and according to this goal, we need to include the necessary functions we can copy it with.

The most interesting application of the information field theory can be found while modelling intellect. The first step of such modelling on the basis of information points is gathering all known information points and establishing information functional connections between them. A good idea is to use artificial intelligence for modelling the information field of artificial intelligence. It can map all information points we know into an information map and can be capable of producing interesting scientific progress in chemistry, for example.

Of course, we need to understand that the information points base for further artificial intelligence development is made from the information field which we as humans have created with the help of God and artificial intelligence, and we will need fitting and developing it in the future systems.

On the other hand, artificial intelligence simultaneous to information field theory and any knowledge we possess, can be used for the destruction and purpose of war. An important concern of ours is to restrict or manage their further development in order not to destroy human beings.

7. Conclusion

In conclusion, the information field theory can be a paradigm-changing revolution in mathematics capable of describing everything in the Universe as precisely as possible in terms of information points and information functions. By this theory, an answer to the Alan Turing's question (1950) can be restructured like this: 'There is no importance if the machine can think or not, it is more significant what machines can create.' It doesn't naturally mean that we came to some end of the research in this field of information, it can be considered as a beginning of a new and interesting direction for further scientific endowments.

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Conflict of interest statement

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