THE PRINCIPLES OF ARTIFICIAL INTELLIGENCE

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Dedication.
This paper is dedicated to the glory of God, the creator.

Preface.
As we move into the 21st century the challenges facing mankind are extreme, it is only with the development of intellectual tools can man hope to overcome these challenges. With this in mind I have set out to put down on paper, the principles of artificial intelligence. I hope that the men and women who are at the forefront of this research find it of some use.

Chapter one
The Eight Principles

1. Intelligence is the ability to make the right choice between two thoughts in opposition.

2. The greater the polarization of the two thoughts the greater the ability.

3. The ability to learn is vital to intelligence.

4. The ability to learn is related to what I call consciousness, which I have determined to be a: Bias to one side of the two thoughts.

5. On the other side there is motivation

6. The motivation and bias are in opposition

7. There are two analytical halves to determine the validity of the two thoughts simultaneously.

8. These two analytical halves are not in opposition but do there job neutrally.

These principles I have been derived by the way my mind comes up with ideas and solves problems, which should be universal to all people.

Chapter two
Self and the Intelligence Loop

I have defined self as the unique memory of the past, which arises between the choices of the two analytical halves.

I have also determined that the basis of intelligence is what I call the intelligence loop. Simply it is: "Want", going to the, "Reason for the Want", going to, "Because want was not fulfilled". Each of these three elements is interconnected only forwards and backwards. As an example if an intelligent machine were to decide weather to go from point A to B. Firstly there must be a "want" to go secondly there must be a "reason for the want" if these two elements are fulfilled then action is taken to go to point B as stated by the third element "because the want was not fulfilled". When considering the loop in the opposite direction, if the action did not fulfill the want i.e. "because want was not fulfilled" then the "reason for the want" is reconsidered i.e. is the "want still valid" and if it is still valid "want" is created which starts the loop all over again. This loop continues until the problem is solved.

Following this loop even a machine can make an intelligent decision. The electrical equivalent of "want" or "reason for want" or "because want was not fulfilled" can have a myriad of forms and is only left to the imagination of the engineer as can be the other elements of the eight principles even though these elements may be difficult to define.

Chapter three
An Analysis of Intelligence using the Eight Principles and the Intelligence Loop

First we have motivation or "want" so the bias, which is in opposition to the motivation, creates an opposite want. Thus we have two wants in opposition or more correctly two thoughts in opposition. Thus intelligence is deciding between the two.

Since we have two wants in opposition when they are applied to the intelligence loop we get opposite outcomes.

The only part of the intelligence loop where the to wants can differ and they must differ at some stage in the loop, is in the "reason for the want". When the two thoughts are applied to the two neutral analytical halves these halves decide if the reason for want is valid signified in the table below by "true". Which shows the only outcome of the two analytical halves.

	Half1	Half2
1.	true	true
2.	false	true
3.	true	false
4.	false	false

Note: 1 and 4 appear to be redundant as no decision is made. Thus when either 2or 3 exits a decision is made.

Chapter four
The Learning Mechanism

Now you might say that if the case of 1and 4 exits then the loop will go on add infinitum. This would be true if there were no learning mechanism. How can a machine learn? When case 1 or 4 exists then there must be a rating system. If the machine considers the case of 1 as "good" in other words "true" and the case of 4 as "bad" in other words "false". If these cases are memorized for a particular want then used to obtain a decision by the two analytical halves, the endless loop will be broken and a decision made.

Now cases 1 and 4 cannot be reached without a set of values, these values rate the level of bias as either –1or 1. When the level of bias is –1 then case 1 is reached and is given the value of "good" so the action is taken. When the bias value is 1 then case 4 is reached and given the value of "bad" so no action is taken. The ability to learn new values i.e. to change –1 to 1 or 1 to -1 is essential.

Learning is done through feedback i.e. was the result of the action good or bad in other words -1or 1 as defined by its values as in case 1, in other words –1. If the result of the action is 1 as given through feedback and rated by other machine values then that value becomes questionable. If this happens a number of times then the value is changed i.e. –1 becomes 1 for that particular want. So the machine will be capable of learning.

Chapter five
Pre-programming of the Wants and Values

Unless there is pre-programming in the machine of what it wants, then cases 1 through 4 cannot be reached and if there is no pre-programming of its values then cases 1 and 4 cannot be rated. Also if these pre-programs cannot be changed and added too then the intellectual ability of the machine will be restricted. So there must be an ability to learn new wants and values. The machine will then grow in intelligence.

I will make the statement that "new wants are taught and new values are learned". This is true unless someone takes the very dangerous action of giving feedback to the machines wants.

Chapter six
The Analytical Halves and Reason

There are two elements to the analytical half and reason, they are "want" and "why". As I have stated "want" is pre-programmed or taught i.e. the need to respond to a command or the need to answer a question. Note: The how? Is also pre-programmed or taught in

other words the how to respond to the command. “Come here” or to the question: “What is your name?”
The “why” can only be true or false, in other words good or bad. To answer the question of “why” the analytical halves searches its data banks for the same situation or in other words “self” and if the data is true or false as represented by cases 1 through to 4 then the right action is taken in other words the “how” is either done or not done. Therefore a decision will be reached depending on the experience and values of the machine. This does not mean it will be the right decision so the outcome can either reinforce the values of the machine or change them if the ability to learn is built in.
What if the situation has never occurred before or there is no pre-programming? Then the “why” is eliminated and the outcome is “true” in other words “good” so action is taken and with the ability to learn that situation is now part of the data banks. This continues as long as the “want” is valid. “Want” can become invalid or given up by the command of “not worth it” or “too hard” or similar commands which must constantly be assessed by fulfilling the correct criteria. As for “self” or in other words “the results of the two analytical halves”, if true were represented by 1 and false represented by 0. Then as shown by the truth table below:

Half1	Half2	Result
1	1	1
0	1	0
1	0	1
0	0	0

So “self” can be represented by the memory of one of the four, three digit combinations above for a particular want.
“Want” on the other hand if represented by a binary number will have a very great number of digits. Since the number of wants and hence thoughts the machine is capable of should try to approach infinity.
In my opinion the number of thoughts a human being is capable of is very small in the order of a few thousand. Most thoughts a repetitive and mostly concerned with our environment this is in contrast with our memory, which is enormous. Our memory and the ability to replay portions of it with a few variations gives us the impression that our thoughts are infinite in scope.

Chapter seven
Encoding and Ideas

Now there must be an encoding pattern or criteria for the thoughts or wants and a deciphering pattern.
These pattern criteria must include things like subject and similar criteria so that any code may be deciphered. The generation of an idea is the partially random generation of a

code; deciphered by the deciphering pattern and analyzed by the intelligence loop. There must be controlling criteria to the generation of the random code or else the idea will not be related to the track of the machines thoughts. The complexity of the encoding and deciphering pattern as well as the complexity of the controlling criteria for the generation of the random idea code, defines the scope of the machines mind.

Chapter eight
The Challenge

The challenge facing engineers and scientists is, how to transform the psychological profile of intelligence into hardware and software. This is a feat greater than the building of the pyramids or the landing of a man on the moon. If mankind is to overcome the immense challenges of the present and the future, it is a feat I believe he will have to accomplish.