Unconscious Motivation of Visual Perception

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Extended Abstract

The objective of this report provides foundations of bottom-up approach on visual recognition. The combination of supply and demand is needed to organize an intelligent device. The "supply to the demand" is essentials for an intelligent operation. Visual perception is considered as a part of behavior control. But meaning depends on the object of each reaction. Then, the meaning of reaction changes case by case. The plural of precise individual conditions about a visual perception are not perceived when it is memorized in a brain.

But we need to describe unconscious reactions in order to construct a system of pattern recognition. The planning process is a top-down approach. We use knowledge as a universal tool in order to manufacture the intelligent device. The bottom-up approach is used to get the knowledge that is the tool of top down. Here, there is the tendency to avoid the temporal motivation and the subjective reaction in the process of the top-down. The tendency suppressed by the development of computer vision.

The reaction of living creature differs from that of the substance. The creature increases its number through the activities of life. It differs from the existence produced by random phenomena. As the result of evolution through natural selection, the creature that fits for the environment increases the number. The creature is the existence of activity. The reaction of creature has the objective that has to live. If the condition of body is changed by an activity of itself, the creature must change the reaction. When temperature of circumstances becomes low, the creature avoids cooling of the body. The universal motivation of behavior is to continue the activity of life. So, some motivations are considered for a reaction.

As a result of trial-and-error of long time, the creature is responding to its situation to maintain the life. It is working in order to maintain the life in the future. But who knows what will happen in the future. The behavior of animal seems subjective. Here, the artificial motivation is available for manufacturing of the artificial vision. We can temporarily assign a motivation for every reaction i.e. we can temporarily assign the motivation for eye movement.

The primitive life does not include conscious activities, because the conscious activity is carried out by neocortex and thalamus [2]. The neocortex is an additional organ for memory, and thalamus is the organ that unifies the reaction of the body at each moment. So, the conscious activity includes the management of memorized reactions. The animal is able to adapt to the renewal of environment by memorizing encountered experiences heuristically. The memorized behavior includes a new attempt. The new attempt is created in the nerve network. The creative characteristic of animal originates by the biochemical reaction of neuron as follows.

The active potential (+40mV) of the nerve cell is generated impulsively in a resting potential (-80mV). And it is transported through biochemical reaction of the cell membrane [3]. A transmitting of the localized electric potential is able to move electron and it is able to generate a proton from a hydrogen atom. The proton is easy to move especially via hydrogen bond in the water solution of organic molecules. The proton and a radical (unpaired electron in the polymer) are electrically pulled at each other. As the results, the active potential induces the chemical reaction that organizes activated activities and makes the memory as the trace of reaction.

If the preconditions of a reaction correspond to the supplies and the results corresponds to demands, this reaction supplies to the demands. The function of organ has been developed as results of trial-and-error of long time. So, if a different animal that live with similar life style, its structure will resemble. The organ for vision has been evolved as follows. 1) Earthworm; photoreceptors are distributed around body, 2) Planaria; photoreceptors are arranged as eyes, 3) Nautilus; the structure of eye is a pin hole camera, 4) Squid; the eye is a camera with lens.

The animal unifies activities of nerve network as “focused attention”. The pattern that is assigned by the focused attention is used to fix the eye axis. Since the linguistic activities are unified, those are dealt serially one by one. But the visual perception is parallel. We perceive a pattern at once. There are phenomena those are express by visual media but it can not describe by linguistic expressions. Those are considered as logical unconsciousness. There are the phenomena those disappear in the world of thought.

The conscious activity of human includes visual perception and linguistic activity. The linguistic activity links to the action of utterance. The movement of a body is unified through the operation of a nerve network. The neocortex integrates a set of activities and the thalamus unifies activities by the mechanism of winner-take-all. The intermittent interactions are carried out at the activated junctions in a nerve network. So, the reaction is intermittently renewed.

That encounters following the adoption of accordingly, the activity of the creature that exists is agreeing to the purpose that maintains a/the life activity.

There are unconscious motivations in visual perception. The mechanism of unconscious activities are when we design a computer vision. It is to We consider logical analyses on visual perception. Each consciousness is unified at each moment by thalamus thorough the algorism of winner tale all. We need consider about unconscious motivation for visual perception. The desiccations on motivation of visual perception for computer vision are described in this paper.

The behavior of an animal is individual and subjective. The gene is a tool box for the activities. The programs in the gene are tools for activities. The dialectical concept of activity is a new tool to describe the intelligence that responds to the changes of outer world at real time.

The universal characteristics in the dialectical reactions are revealed through the investigation about the origin of life. Each reaction is activated by preconditions of the reaction. If circulating of a series of reactions forms a continuous chain of activities, this system is able to be active continuously.

The life is supported by many kinds of polymers and catalysts in order to continue the reaction. Interaction among activated junctions contributes to construct the next activities. One of important reaction for a first life is the unification of plural activities. That is the origin of intelligence.

The first life is organized by organic materials. Every organic material such as hydrocarbons and carbohydrates on the earth were produced of carbon dioxide in the early earth without photosynthesis of plants. The carbon dioxide is very soluble in the sea water. The sea water circulates to deep sea.

We tried the experiment under the high pressure with low temperature on the ice in which CO_2 and NaCl are solved. Many bubbles appeared in the ice.

The organic molecules form many kinds of large molecules by the polymerization. The speed of polymerization is slow. Interactions among intermediates of polymers make many kinds of huge organic molecules. The polymer possesses a function of copy production. It is an organic catalyst. Those are materials to produce a first life.

If we can present the way to manage activated plural demands, we can carry out such intelligent operation by using a digital computer. A compact speech recognition system is designed from view point of engineering. That is “Implementation according to demand”.

As for the processing of recognition, the system must adjust to the production of speech. The recognition depends on the segmentation. That is, every activity is composed of reaction of a neuron in a brain. The segmentation of analyses for recognition has to adjust to the segmentation of activities for speech production.

Key words KJPR2008, Inflationary cosmology, Big Bang, Particle accelerator, Higgs particle.

References

[1] H. I. Suk and B. K. Sin, “HMM-Based Gait Recognition with Human Profiles”, In *Proc. of Joint IAPR SSPR 2006 /SPR2006*, Hong Kong, China, pp. 596-603, 2006.

[2] H. K. Lee and J. H. Kim, "An HMM-Based Threshold Model Approach for Gesture Recognition," *IEEE Transaction on PAMI*, vol. 21, pp. 961-973, 1999.

[3] M. Brand, N. Oliver, and A. Pentland, “Coupled hidden Markov models for complex action recognition,” In *Proc. of CVPR*, pp. 994-999, 1997.

[4] P. Kakumanu, S. Makrogiannis, and N. Bourbakis, “A Survey on Pixel-Based Skin Color Detection Techniques,” *Pattern Recognition*, vol. 40, pp. 1106-1122, 2007.

[5] F. V. Jensen, *Bayesian Networks and Decision Graphs*, Chapter 1, pp. 3-34, Springer, 2001.

[6] K. P. Murphy, *Dynamic Bayesian Network: Representation, Inference and Learning*, Ph.D. Dissertation, University of California, Berkeley, 2002.