Artificial Neural Network and Open CV - Surpassing Expectations!!

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ABSTRACT

The paper describes some surpassing expectations and recent developments in neural networks and open CV. The paper mentions a new architecture, the pulsed neural network, considered the next generation of neural networks. The paper also explores the use of memristors in the development of a brain-like computer called the Moneta. A new model, multi/infinite-dimensional neural networks, is a recent development in advanced neural networks. The paper concludes that the need for neural networks to develop human-like technology is essential and may be non-expendable for it.

Keywords : Neural Network, Pi Camera, Phython, Pulsed Neural Network, Neuro-fuzzy Computing, MoNETA.

I. INTRODUCTION

Neural networks can handle many problems to deal with enormous quantities of data. They are better suited than the traditional computer model to address issues humans arenaturally good at and which computers cannot solve very well. For example, clustering, pattern recognition, generalizing, etc., are problems humans hold better than computers, and so do neural networks. Research is also focused on developing new models of neural networks that are better at solving these problems.

IMPROVEMENT OF EXISTING TECHNOLOGIES

Neural Network technologies rapidly will improved upon in the future. some of the main things are handwriting, speech recognition to stock market prediction, and Automatic car driving will become more sophisticated as researchers develop better training methods and network architectures. Neural Networks might, in the future, allow:

1. Robots that can see, feel, and predict the world around them
2. Improved stock prediction
3. Typical usage of self-driving cars
4. Composition of music
5. Handwritten documents to be automatically transformed into formatted word processing documents
6. Trends found in the human genome to aid in the understanding of the data compiled by the HumanGenome Project
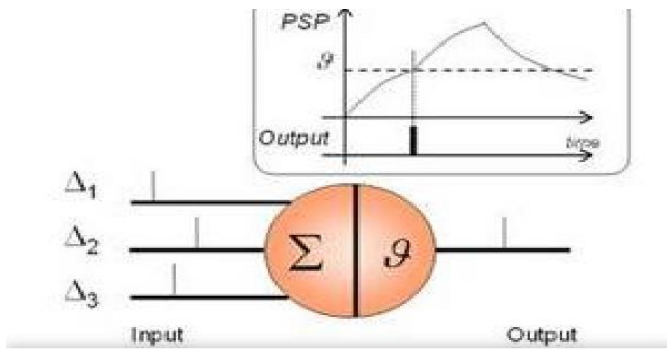7. Medical Image Analysis.

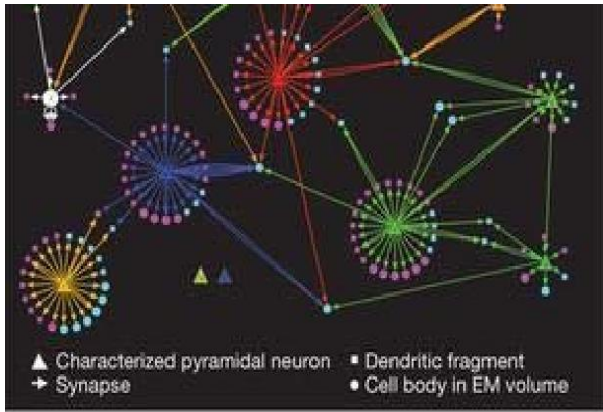Fig 1. Basic model of a Pulsed Neuron,The future of Neural Network

Fig 2.3-Dimensional Neural Network from the human brain

The following are the neural network projects currently underway

1. Artificial Neural Network based Self-Driving Car

Autonomous Vehicles are the fast-growing technology in the field of Automobiles with advanced features. These vehicles can sense the environment, navigating and fulfilling human capabilities without any human interference. The paper touches on building a three-wheel vehicular prototype that will detect the obstacles and, in turn, avoid collision and moves safely towards the destination. This paper explains how the Artificial Neural Network aims to control the vehicle without any human intervention. Images from extensive data, which is the only input to the prototype. The captured images undergo an Image processing technique that will calculate the frame's dimensions or moving objects and detect them.

2. Lesion Extraction using Open Computer Vision

Endometriosis is caused by the endometriotic tissue that streaks the uterus from the outside. 6% of women under childbearing age are affected by endometriosis disorder. The presence of the issue can be identified through MRI, Transvaginal Ultra Sound Scan (TVUS), Laparoscopic images and pathological slides. Image-based applications are processed using Image Pre-processing, Image Segmentation, Image Enhancement and Feature Extraction Techniques. Open Computer Vision (Open CV) extracts the features from Laparoscopic Endometriosis Images (LPI). This paper proposed a method to identify the endometriotic tissue using LPI images. The proposed method uses several image processing techniques of OpenCV includes Adaptive Threshold, Contour Mask, to extract the lesion area from the Laparoscopic images. The designed algorithm has experimented with, and the results yielded 53.5 % mean value intensity in identifying the lesion area.

3. Flow counter and estimation using deep learning

A flow counter and estimation in real-time using deep learning is an essential fat of security and entertainment, completed this technology as a game-altering and even better human identification and counting part in terms of accurateness. This paper focuses on one of the advanced deep learning tools in people depending to achieve higher efficiency. Also, focus on Open C V, NN, and machine learning to count the number I/O a defined place using NN. Here, the system is trained by artificial neural networks and computer vision. Real-time people flow estimation is fundamental for several applications like security, business, tourism, and other fields where people flow surveillance is required.

A WORD OF AWARENESS
Although NN seems to solve many problems, they are not simple; overconfidence in neural networks can

result in costly mistakes. As an example the Pentagon, USA, required that the tanks in the US army be made harder to attack. The research team decided to fit each tank with a digital camera hooked up to a computer as part of this attempt. The system would continually scan the outside, for example, an enemy tank hiding behind a tree, and alert the tank crew to anything suspicious. Computers are good at doing repetitive tasks without taking a break, but they generally interpret images. The solution to solve the problem was to employ a neural network.

II. FUTURE SCOPE

An understanding of the future of neural networks and theirapplications will help researchers to appreciate the importance and essentiality of their role in the development of a human-like an artificial brain. Artificial Intelligence research is directed towards the development of artificial life, which is not possible

III. CONCLUSION

Artificial neural networks and Open CV are going very rapidly in IT for different applications and new embedded systems. The integration is already delivering good results towards more effective and efficient solutions to problems otherwise better handled by human beings. Current research seems to be moving in the right direction towards the ultimate goal of all artificial intelligence.

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