TOD™ Operational and Strategic Options

“The Age of Tissue Computing has Arrived™”

Telescopes

Optical, Radio, Inferred, X–Gama Ray, Others

Purpose: To cost-effectively surveil, detect, analyze, map, and report data, deviations, movements, and items or events from within a defined target area or space, reporting real-time (or nearly real-time) results with precision, accuracy, and resolution, meeting or exceeding mission objectives.

Process: For some telescope application missions, with low data volumes, a small number of data sourcing points, windows, or detectable items, and moderate to long time intervals for reporting results, conventional or specially configured parallel digital processing systems can provide acceptable solutions.

However, for some expanded telescope application missions, the ability to detect, analyze, map and report upon coverage areas or targets, with massive data acquisition, huge signal and data processing volumes, or where there are immediate, real-time requirements to produce accurate and highly definitive results for mission success, conventional digital processing is inadequate. Quantum and neural computing offer potential solutions.

Solutions and Strategies: The forthcoming availability of a family of Tissue Operating Devices (TOD™), delivered by BCM Industries (BCM), is poised to revolutionize the world of computing, data processing, information management, data mining, big data, deep learning, natural language processing, and machine intelligence. Each TOD™ is powered by millions of living neurons existing within Real Neural Networks (RNNs) that are naturally intelligent, replacing the need to try and simulate human intelligence, with so-called “artificial” intelligence. TOD™ provided RNN offers massively expandable scope for processing power and speed, improved accuracy of results, and major time and cost benefits to all forms of telescope applications and systems.

TOD™ Tissue Computers (TCs) will soon become the logical strategic solution for processing the massive volumes of data, in real-time, for telescope applications. TOD™ will report targets, anomalies, events and develop correct answers to specific questions, based on limited guidance and partial information provided by the human user(s). Trained neurons will naturally think, learn, adapt, and intuitively apply accumulated knowledge to fill-in any missing gaps, steps, logic, mathematical calculations, or procedures required by the mission.

TOD™ offers users access to adaptive thinking, because living neurons create, connect to, adapt and shape their own neural networks. The result is a consolidated system – an organism – capable of adaptive thinking, accumulated knowledge, intuition, and intelligence. For additional information on this subject see the BCM website TOD Article – “Real Neural Networks Will Replace Artificial Neural Networks.”

TOD™ devices have the further advantage of addressing either digital or sensory inputs and data transfers. The ability to process direct sensorial information such as analog optical, audio, video, RF, infrared, thermal, sonic, and seismic data is a massive advantage, obviating the need to transform such inputs into binary digital ‘data’ (zeros and ones) required for digital processing. This process takes valuable time, delaying processing results, and also loses information (possibly vital information) in the conversion process. See figures below.

Yet another advantage of TOD™ devices is their ability to store virtually infinite amounts of information. Within the DNA of each living neuron, there is a near infinite storage capacity. The storage capacity also increases exponentially with neural network size. In contrast, digital systems can rapidly run out of data storage capacity when massive amounts of data are involved.

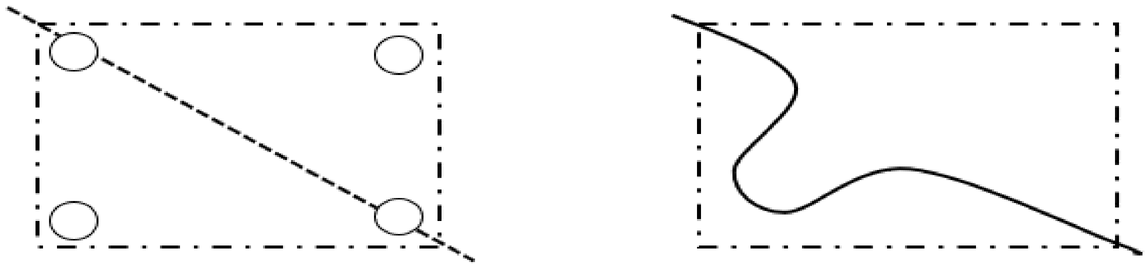
The advantages and powers of tissue computing will push the limits of telescope-based application problem solving. The two Figures illustrate why neural processing of analog sensor signals will be superior to conventional digitalized data, with resulting distortion of results. These examples address “Dimple” and “Spike” distortions. Depending upon the telescope application mission, these digital distortions may be critical.

For additional information on Tissue Computing, TOD™ design, Data Mining, Big Data, neural training, learning, Adaptive Thinking, Assembled Knowledge, Intuitive Neural Intelligence, and related subjects, visit the BCM Industries website or contact BCM.

Analog and Digital in Dimple Data Example

TOD™ Direct Processes Analog Sensor Inputs

Obtaining and processing accurate dimple data can change results



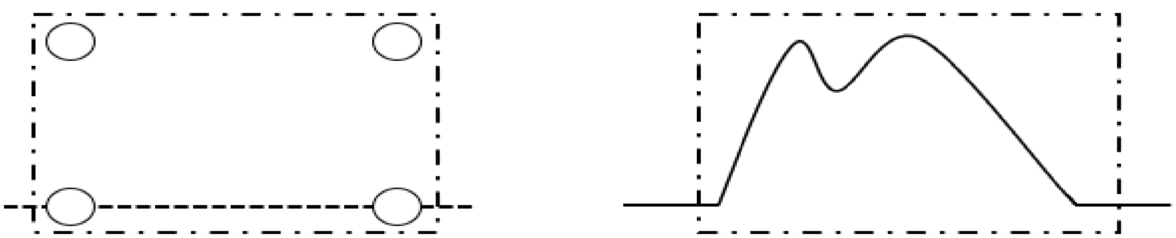
Code:

- Digital Data Collection Point
- Digital Estimate of Data Path
- Actual Data Path
- Frame of Data Snapshot

Analog and Digital in Spike Data Example

TOD™ Direct Processes Analog Sensor Inputs

Obtaining and processing accurate spike data can change results



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