

April 18, 2012

Volume 1, Issue 3

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Highlights

- CTI Expanding Horizons
- A Success Story
- Featured Product
- Free Seminar on May 22, 2012

Our Distributors

- [APPLETec Ltd., Israel](#)
- [CoreEL, India](#)
- [Road Narrows, USA](#)



## Future of Multicore and Parallelism

Multicore technology represents a system with two or more working processor chips. These chips are also referred to as *cores* and work together to improve the overall performance of a system. Multicore processor technology was conceptualized, and has revolved, around the idea of making parallel computing possible.

Currently, Multicore technology is the path many are advocating for “parallelism” even though there are a few challenges associated with this approach. To assess and explore this technology a conference was held in San Jose, in late March 2012.

“The Conference of Applied Multicore Processing Technology” is the largest conference on this topic in the world. March 28 was “Multicore Strategy Day” and a VIP Panel discussion was one of the highlights of the day. Participants in the discussion were the elites from industries and research organizations.

Mr. Bruce McCormick, CEO of CogniMem™ Technologies Inc., (CTI) was one of the distinguished panelists in this discussion. He highlighted some of the issues that today’s multicore technology faces. “It lacks true parallelism” said Mr. McCormick, “challenges like scalability, cache coherency,

clock synchronization and other issues related to shared memory are among the most intimidating problems with this approach.”

McCormick said that fundamentally multicore technology is an architecture based on Von Neumann’s model, a serial architecture, and anything based on a serial architecture can never be truly parallel. He also mentioned “even Amdahl’s law now favors a truly parallel architecture to get high performance and efficiency”

Gene Amdahl, a computer architect and high-tech entrepreneur, formulated Amdahl's law. According to this law, performance improvement to be gained from using a faster mode of execution is limited by a fraction of the time the faster mode can be used. Following is the equation which describes his law:

$$\text{Overall Speed} = \frac{1}{(1-f) + \frac{f}{s}}$$

Where f = fraction of part that is enhanced  
s = Speed of enhanced part



*“...Technology used in these chips has made CTI a leader in the industry of cognitive sensing and computing- going beyond Von Neumann.....”*



*“...System designers have dreamed of the tremendous capabilities that will be unleashed when machines finally gain the gift of sight ....”*



So adding more cores based on serial architecture, there will still be a serial approach to the problem.

Mr. McCormick talked about the technology used in CogniMem’s cognitive computing chips. Technology used in these chips has made CTI a leader in the industry of Cognitive Sensing & Computing—going beyond Von Neumann’s computer architecture to deliver unmatched levels of processing requiring far less energy. This technology uses a truly parallel hardwired architecture to do pattern recognition and anomaly detection. The technology is very scalable, low power and performance efficient.

Panelists and the audience were intrigued with the technology and asked many questions of Mr. McCormick. If you have any queries please visit CTI’s [web site](#) or write to CTI at [info@CogniMem.com](mailto:info@CogniMem.com).

### **CTI Joins EVA**

Our eyes are amazing. Sight gives us the ability to see what is around us, beautiful colors, nature, people, the list is never ending. It allows us to understand and interact with our surroundings and to make sense of what we see. Our eyes process a huge amount of data as we look around us. Human vision has always been a highly interesting topic for scientists and researchers. Machine vision is even more intriguing. System designers have dreamed for years of the capabilities that will be available when machines finally gain the gift of sight.



CogniMem announces joining the [Embedded Vision Alliance \(EVA\)](#) to advance the use of vision in embedded applications. EVA has great resources for practical know-how in order to effectively incorporate embedded vision technology. CogniMem is excited about taking advantage of these resources and providing its customers with greater application solutions.

### **CTI Expands Globally**

CTI products have now been shipped to England, France, India, Israel, Mexico and China. Customers are very satisfied with their products and are using them in embedded designs, for research, and various applications.

[RoadNarrows](#), CTI’s first U.S. distributor, recently added more CogniMem products to their inventory enabling the on-line purchase of the V1KU, CM1K 69PGA and CogniBlox.

[APPLEtec](#), CTI’s Israeli distributor will be participating in Israel’s largest [electronics trade show](#) May 22 to May 23 in [Tel Aviv](#). APPLEtec will have a booth offering all of CogniMem’s products. This will be a great opportunity to learn more about CTI’s products and potential applications.

**CogniMem's cutting edge technology leads Granite Bay High's robotics team, Renevatio, to win the "Excellence in Engineering award" in Davis, CA.**



*"This year Renevatio Team 295 has been awarded the prestigious "Excellence in Engineering" award at the competition held in Davis, CA"*

In [FRC \(First Robotics Competition\)-2012](#) high school teams compete with each other in a game of basketball, except players are robots instead of humans. As in a real game of basketball, the team to score the highest number of points wins. Interestingly enough, teams can score points apart from just making a basket—for instance they can balance their robot on a see-saw to earn bonus points. FRC recognized all aspects involved in the competition and rewarded teams for their efforts using innovation and technology. This year, Renevatio Team 295 has been awarded with the prestigious "Excellence in Engineering" award in the competition held in Davis, CA.

Renevatio received this award for approaching the task in a unique way using CTI's V1KU. The V1KU has a CM1K chip which can be used for locating nets to shoot a basket. A CMOS sensor in V1KU provides visual inputs in the form of an input vector and the CM1K chip processes this information and compares it to learned examples of the nets. By using 2 cameras, stereoscopic information is provided and distance information can then be obtained through triangulation. The low power CM1Ks were also key in minimizing wiring and battery concerns. The secret of its amazing performance is its truly parallel hardwired architecture, a real plus as the onboard processor in the robots has too many other tasks to handle to deal with real time computationally intensive pattern recognition.



Team 295's Robot making a basket

On the final day of competition a panel of researchers, technologists, and engineers judged Team 295 on the technology they used. Students did a great job of explaining CTI's technology. They explained the entire process involved in training and helped the panelists understand how effective and flexible this technology can be for future computing and how they used this technology to their advantage. After listening and understanding the potential and excellence of this technology, judges decided to give this auspicious award to Granite Bay High School's Robotics Team 295, Renevatio.



David Chandler Brown with the award



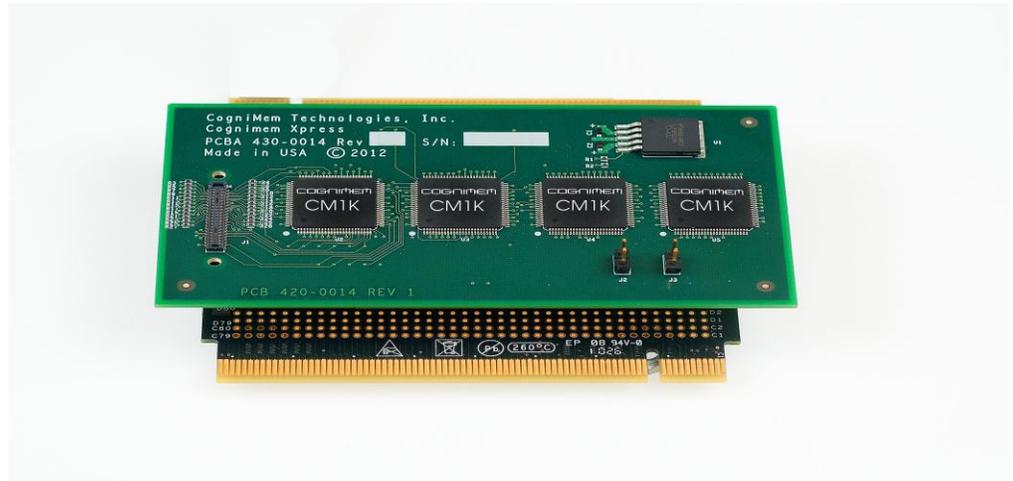
## Featured Product: CogniMem Express Daughter Card

CogniMem is pleased to announce the CogniMem Express Board. This is a perfect match for any embedded design. The Express Board is an easy solution for providing neural network capabilities to any embedded design. This board has 4 [CM1K](#) chips, a Hirose connector, three female connectors (a 14 pin, a 20 pin, and a 40 pin) at the back of the board.

4 CM1K chips provide 4096 neurons to a system, however, it is not limited to this number, one can increase the number of neurons by connecting more [CMEnK](#) modules through on-board Hirose connector.



"CogniMem is pleased to announce the CogniMem Express Board. Its simple design makes it a perfect match for any embedded designs."



- 1) Picture shown above is the CogniMem express board on a Freescale Tower prototyping board.
- 2) The CogniMem Express Board can be easily used with PCI express boards and other prototyping and evaluation boards.

This is a great board for embedded designers who have always desired including machine learning capabilities in their designs. It is really easy to connect and communicate with. This product has excellent capabilities of doing recognition and would be an asset to any design. For further information or queries please write to us at [info@CogniMem.com](mailto:info@CogniMem.com)

## Learn with the experts: Free Seminar on May 22

CogniMem technology is a novel approach to modern computing. To provide a better understanding of this technology CTI is organizing a free seminar in San Jose on May 22, 2012. This seminar will feature some of the pioneers of the industry in this technology and should prove to be a great opportunity to ask questions of the experts themselves.

Do not miss this opportunity to learn. There will be lots of fun and learning at this seminar.

The [Syllabus](#) can be downloaded from our website. For more information on the seminar, visit to our [website](#) or email us at [info@CogniMem.com](mailto:info@CogniMem.com).

