SMART Design

Deep Learning for Electronics Manufacturing

J. Cabello
Mycronic AB, Täby, Sweden

Abstract

Deep learning is entering in the electronics manufacturing to further increase the reliability of its processes. In some cases, like in the operation of Pick & Place machines failures can only be afforded in a few cases per million operations.

The combination of this high reliability requirement, autonomous decision making without intervention of human operators and a huge ever-growing flora of components to inspect present challenges to deploy deep learning in production systems. Particularly deep learning limited explain ability when the algorithms fail and the need to reduce also human involvement in supervised training schemas make it harder for this technology to arrive to the factory line.

Biography

Javier Cabello holds a degree in Computer Science and Engineering from Heriot-Watt University at Edinburgh. He is Lead Engineer for the computer vision group at Mycronic AB in Stockholm. He has being involved in developing several generations of machines within Pick & Place and Jetting technologies for the electronics manufacturing industry.

Cloud-Accelerated Innovation for Semiconductor Design and Verification

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Abstract

An explosion in the number and variety of intelligent edge devices, combined with cloud computing, are driving a need for more rapid innovation in semiconductor products. This talk presents examples and best-practices for cloud-accelerated semiconductor design and verification, including use-cases and examples inside and outside of Amazon. The talk will include an overview of how the development of next-generation products is enhanced through the use of cloud for scalable, high-throughput EDA flows. The talk will cover performance optimizations for computing, storage, and EDA workload orchestration, as well as covering how cloud enables secure collaboration in the semiconductor and electronics supply chain.

Biography

David Pellerin serves as Head of Worldwide Business Development for Hitech/Semiconductor at Amazon Web Services. Prior to joining AWS, Mr. Pellerin had a career in electronic design automation and hardware-accelerated reconfigurable computing. He has experience with digital logic simulation and optimization, high-level synthesis, grid and cluster computing, and embedded systems for image, video, and network processing. He has published five Prentice Hall technical books on EDA-related topics.

Addressing the "New-Space" Paradigm Shift in Development and Production of High Reliability, Space Grade Semiconductor Components

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Abstract

Semiconductor devices used for space missions have for decades dominated as specialized, radiation hardened components, built to the highest standards of reliability. Developed and manufactured in small quantities, the cost of traditional HighRel devices can exceed their commercial counterparts by several orders of magnitude.

In recent years however, the number of smaller satellites, placed in lower orbits and designed for shorter operating lifetime, has increased. Especially the the concept of larger satellite constellations, with hundreds to thousands of spacecraft communicating with each other, covering the entire surface of the earth with a dense mesh of instruments or communication equipment for particular applications, have challenged the industry by their unconventional requirements. Cost of individual equipment becomes a primary factor for a mission involving a large number of spacecraft. New ways of designing for space need to be considered, questioning the traditional risk assessment.

From the perspective of a traditional HighRel component supplier, what is our strategy to follow this shift from the "best possible" to the "good enough"? Looking at what impact a harsh environment can have on semiconductor devices, and what makes a space grade component flight-worthy, the LeanREL™ concept and line of products is introduced. Aiming to combine traditional space pedigree with a manufacturing flow substantially reducing cost, the technology is an enabler for lower orbit, shorter lifetime, high volume space missions.

Biography

Christian Sayer is Field Applications Engineer for Cobham Gaisler and Cobham Advanced Electronic Solutions. His focus is on processor, memory, interface, mixed signal and power components. Prior to Cobham, he worked as design and applications engineer for companies in the fabless semiconductor and embedded domain. Christian studied electrical engineering in Berlin, Montpellier and Paris. He holds a MSc. (Dipl.-Ing.) in Electrical Engineering of the Technical University of Berlin.

Pulini Gabriele

G. Pulini
Sr. Business Development Manager
Mentor Graphics, Wilsonville, United States

Biography

Gabriele Pulini joined Mentor in 1991 and has extensive engineering and marketing experience on the new technologies that changed over time the way new products are designed and brought to market. As part of the Emulation business unit within Mentor, a Siemens business, he is responsible for the new business opportunities, with today's focus on self-driving and artificial intelligence applications.

Taheri Babak

B. Taheri
CEO/CTO of Silvaco
Silvaco Inc, Santa Clara, United States

Biography

Babak Taheri is the CEO at Silvaco Inc., a leading provider of TCAD, EDA, and design IP software. He began his career at Silvaco as chief technical officer and executive vice-president of products. Previously, he was the CEO / president of IBT working with investors, private equity firms, and startups on M&A, technology, and business diligence.

While at IBT, he served on advisory boards of MEMS World Summit, Novasentis, AGCM, ALEA labs, Lion Point Capital, and Silver Lake. Prior to IBT, he was the VP & GM of the sensor solutions division at Freescale semiconductor (now NXP).

Babak was the recipient of "the perfect project award" in 2003 while at Cypress; Twice recipient of the "Diamond Chip Award" in 2013 /14 while at Freescale; recipient of the MEMS & Sensors executive of the year award in 2014, and in 2015 was the recipient of the Distinguished Engineering Alumni Medal from UC. Davis College of Engineering, where he is on the advisory board to the college.

He also held VP/GM roles at Cypress Semiconductors, Invensense (now TDK) and key roles at SRI International and Apple. He received his Ph.D. in biomedical engineering from UC Davis with majors in EECS and Neurosciences, has over 20 published articles and holds 28 issued patents.