Infield System Test and Debug by

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Abstract:

Infield Test and Debug provides deeper insights into the system behavior and structural quality while the system is running in mission-mode. It provides a non-intrusive method for testing and debug of complex computer systems. This is specifically useful in mission-critical applications such as space applications, ADAS (Advanced Driver Assistance Systems), for various industrial/robotic applications as well as virtually all real-time and datacenter/AI applications including Telecom infrastructure applications.

In this tutorial we will establish the motivation for Infield system Test & Debug, cover the various testing and debug techniques that are available today. We will then introduce the Infield system testing and debug mechanisms available for the closed-chassis systems using USB Type-C, PCIe and any other high-speed interfaces. We will conclude with results from an Infield system test and Debug used in real-world applications across the various industries.

Short-Bio of Sankaran Menon

Sankaran started his career in the academia as a faculty member then transitioned to industry after 4 years by joining Texas Instruments in Dallas, TX, where he worked on DFX for ASICs. Following a two-year tenure at Texas Instruments, Sankaran moved to Intel in Austin, where he dedicated over 24 years to serving as a DFX Architect for Xscale SoCs, Atom/Big-Core SOCs, and FPGA/Structured ASICs.

He is a Senior Life Member of IEEE and has chaired numerous IEEE conferences and workshops. He holds over 34 granted patents and has filed over 80 patent applications. With a portfolio of over 100 publications, he made significant contributions to various standards and workgroups, including IEEE P1500, IEEE 1149.1, IEEE 1149.7, MIPI Debug standards, USB Debug Class, and USB Type-C Debug standards. Presently, he serves as the Chair of IEEE P2929 Standard for System-Level State Extraction for Functional Validation and Debug and has co-founded more than 10 IEEE conferences/workshops in the realm of VLSI Testing/Debug.

Sankaran earned his Ph.D. and MSEE degrees from Colorado State University, Fort Collins, USA. In his spare time, he enjoys photography, videography, music and traveling.

He has recently presented a tutorial at 2024 IEEE Intl Test Conference titled "Infield System Test and Debug", which he will be presenting here.