Mixed-signal design in the era of Cheap Algorithms; What will an A/D converter look like in the year 2025

Abstract

At the dawn of the VLSI era, analog IC designers often thought of themselves as artists first and engineers second. They existed in a world apart from the digital designers who worked down the hall, carefully crafting precise circuits that were only married to the digital side near the end of a project schedule. If the resulting design missed its performance target, a fix required multiple, costly iterations.

The advent of modern CMOS process geometries has caused a dramatic increase in project costs, which in turn has changed the way that the industry approaches the design process. Algorithmic approaches once considered unthinkable are now eminently practical and indeed required.

Nowhere is this trend more evident than in the design of modern data converters. This talk will focus on how data converters are evolving to meet the new realities of nano-scale design, and speculate about what an A/D might look like a decade from now.