

Invited Talk 7



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Networked Sensors: The Last Expansion of the Internet

Abstract:

Over the past few decades, we have witnessed the growth of the Internet. It began with mainframe servers but gradually expanded to smaller devices like PCs, laptops, smartphones, and edge computers. The latter have had a significant impact on how typical installations in industries and buildings are managed at an operational level. This success has always relied on easier communication between devices, while central IT systems maintained control. With the rise of AI, the advantages of this easier communication have become even more pronounced. Moreover, even tiny systems like sensors can now possess the computational power that standard PCs had just a few years ago, thanks to Moore's Law.

Now, we can create tiny but powerful networked sensors and actuators, effectively closing the last gap between the Internet and the physical world. First and foremost, you no longer need a translator (gateway) between the top level (IT) and the field level (field buses, analog interfaces, etc.), which simplifies the overall system, boosts performance, and allows for more secure operations than ever before. These tiny networked devices have become intelligent communication partners; they can provide you with information rather than just raw data and can perform tasks autonomously. Let's see how the world is changing this time with the expansion of the Internet?