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Design and Development of ZEDX: A Low-Cost Hybrid FPGA–ARM Evaluation Platform for Embedded SoC Applications

Varsha Rokade[1], Bhavi Sankhala[2], Pallavi Khandare[3], Prof. K. Nirmalakumari[4]
Department of Electronics and Telecommunication Engineering
K. K. Wagh Institute of Engineering Education and Research, Nashik, Maharashtra, India
vsrokade370222@kkwagh.edu.in

Abstract: *This research presents a low-cost hybrid FPGA–ARM evaluation platform, called ZEDX, based on the Xilinx ZYNQ-7000 SoC, that allows complete access to its processing and programmable logic sections. It thus allows full hardware–software co-design for embedded applications. ZEDX also implements UART, RS-485, Ethernet, LCD, and SD card interfaces, satisfying the needs of rapid prototyping and academic learning. Experimental validation shows 95% efficiency and approximately 75% cost reduction compared to commercial FPGA–ARM boards, positioning ZEDX as a cost-effective and scalable solution for research and educational environments.*

Keywords: FPGA–ARM Co-Design; System-on-Chip; Embedded Systems; Evaluation Board; ZYNQ-7000; Hardware–Software Integration

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