International Conference on Next Generation Electronics : Submission (108) has been created.

1 message

Microsoft CMT <noreply@msr-cmt.org>   Thu, Jan 8, 2026 at 8:29 PM
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Hello,

The following submission has been created.

Track Name: NELEX2025

Paper ID: 108

Paper Title: Heterogeneous Multicore SoC Architecture for Real-Time Biomedical Data Analysis

Abstract:
In this paper, the design of a heterogeneous multi core system on chip will be described and will be used
in real time biomedical data analysis. Most current healthcare monitoring systems rely on cloud computing
or general-purpose processors and hence may cause delays, increased power usage, and data privacy issues.
A RISC V based architecture that introduces the processing capability onto the chip is proposed in this
work. It has a general-purpose core of control facilities, and a second processing core, optimized to do
digital signal processing. New custom hardware instructions are added to accelerate these common
biomedical signal processing filtering and frequency analysis operations. There is also a hardware
convolutional neural network accelerator to assist in automatic diagnosing the device. Since all
computation will be done on-site, the system will be quicker and will not expose sensitive medical
information to external networks. The design suggested demonstrates that a tailored hardware that is
developed on an open processor platform could offer an effective and secure means of continuous biomedical
monitoring appliances.

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Authors:
- subbulakshmiarunachalam12@gmail.com
- balajis07032005@gmail.com (Primary)
- manikandan23305@gmail.com

Primary Subject Area: Semiconductor Devices, VLSI Design and Embedded Systems

Secondary Subject Areas:
    Signal Processing, Image Processing, Biomedical Signal and Image Processing

Submission Files:
    Heterogeneous_Multi_Core_Soc_Architecture_For_Real_Time_Biomedical_Data_Analysis.pdf (481 Kb, Thu, 08
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Submission Questions Response: Not Entered

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