

# Abstract

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## **FPGA Implementation of PSO-Based Object Tracking System Using SSIM**

In this paper, we present implementation of object tracking system targeting video sequence based on Particle Swarm Optimization (PSO) using Structural SIMilarity index (SSIM) as PSO's fitness function on field programmable gate array (FPGA). The proposed algorithm's performance has been tested and evaluated over different video sequences, showing its adaption for tracking in real-time. After presenting PSO algorithm and SSIM index, we show how the system's architecture has been simplified for FPGA implementation and achieved better results than its software implementation counterpart.