



DESIGN AND CHARACTERIZATION OF AUTOMATED COLOR SENSOR SYSTEM

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Abstract: *The paper presents a color sensor system that can process light reflected from a surface and produce a digital output representing the color of the surface. The end-user interface circuit requires only a 3-bit pseudo flash analog-to-digital converter (ADC) in place of the conventional/typical design comprising ADC, digital signal processor and memory. For scalability and compactness, the ADC was designed such that only two comparators were required regardless of the number of color/wavelength to be identified. The complete system design has been implemented in hardware (bread board) and fully characterized. The ADC achieved less than 0.1 LSB for both INL and DNL. The experimental results also demonstrate that the color sensor system is working as intended at 20 kHz while maintaining greater than 2.5 ENOB by the ADC. This work proved the design concept and the system will be realized with integrated circuit technology in future to improve its operating frequency.*

Index Terms: Color sensor, light sensor, analog to digital converter (ADC), flash ADC