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## Adaptive scrambling technique hiding scanned documents in a digital media

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This paper introduces an efficient computer-based steganographic method for embedding secret information into images without producing noticeable changes. It's a one-to-one matching between the pixels from the cover image to the pixel in scanned documents image. The proposed algorithm hide that portion of a scanned document which represents textual information and omit the background portion that would not offer us any useful gain either compressed or hided. There is no need of referencing the original cover image while extracting the embedded data from a stego-image. This method utilizes the characteristic of the human vision's sensitivity to gray value variations from smoothness to contrast. The method not only provides a better way for embedding large amounts of data into cover images with imperceptions but also offers an easy way to accomplish secrecy. This method provides better results as compared to LSB replacement method where the distortions are spread all over the image. The proposed algorithm indicates that distortions resulting from the data embedding process are less noticeable to human eyes. Three different ranges with variable numbers of embedded bits shown at experimental work gives imperceptible results and distortions that observed in stego images are less as compared to conventional LSB replacement techniques.

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## Photovoltaics electricity

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With the advent of low-cost solar panels and our ability to generate, store and use electrical energy locally and intelligently without the need for long-range transmission, the world is about to witness transformational changes in electricity infrastructure. The use of photovoltaics (PV) as source of direct current (DC) power reduces the cost and improves the reliability of PV system. DC microgrid and DC nanogrid based on PV and storage can provide sustainable electric power to all human beings in equitable fashion. The electricity industry in developed economies is on the cusp of a dramatic transformation driven by a series of changes that includes emergence of rooftop solar and battery storage as the dominant distributed generation source, real time grid monitoring, emergence of microgrid and nanogrid in place of integrated electric grid, improved energy efficiency, advantages of direct current in place of alternating current, cyber and grid security, climate control and weather tolerant electric infrastructures. The continuous decrease in the cost of photovoltaics (PV) generated electricity is now making it possible to provide electrical energy to over 1.5 billion people who previously have had no access to electricity. Similar to the explosive growth of mobile phones worldwide (no need for land lines); PV combined with battery storage and a DC energy distribution system will provide electricity at very low cost. A PV and battery storage based DC Nanogrid is the most practical low-cost method of providing cost effective electricity to emerging and under developed economies worldwide.

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