ABSTRACT

An image sensor has a plurality of pixels in a pixel array. Each pixel includes a photoelectric conversion unit below an insulating layer and a light guide to transmit light to the photoelectric conversion unit. Across five or more pixels arrayed in a direction, the light guides have a spacing between them that varies non-monotonically across the five or more pixels. A width of the light guide and/or a horizontal pitch between consecutive light guides may vary non-monotonically across same. A light guide of a pixel that detects light of shorter wavelengths only may be narrower than a light guide of another pixel that detects light of longer wavelengths. A color filter may be coupled to the light guide. A width of a gap between consecutive color filters may vary non-monotonically across same. A pitch between the gaps may vary non-monotonically across same.