WHAT IS CLAIMED IS:

1. An image sensor, comprising:

a photosensitive pixel array; and

a filter arranged on the photosensitive array, wherein the filter comprises a filter unit array comprised a plurality of filter units; wherein each filter unit covers N photosensitive pixels, and some of the filter units comprise white filter areas, wherein the white filter areas cover 1, ... or N-1 photosensitive pixels, wherein a merged pixel is formed by the N photosensitive pixels covered by the same filter unit, wherein N is a positive integer greater than 1.

2. The image sensor of claim 1, wherein the filter unit array comprises R filter units, G filter units and B filter units, wherein each of the G filter units comprises a white filter area, and the white filter area covers 1, ... or N-1 photosensitive pixels covered by a G filter unit.

3. The image sensor of claim 2, wherein each filter unit comprises 2*2 photosensitive pixels, wherein each G filter unit comprises 2*2 photosensitive pixels, wherein the G filter unit comprises a white filter area and a green filter area; wherein the white filter area covers one of the four photosensitive pixels of the G filter unit and the green filter area covers the other three; or

wherein the white filter area covers two of the four photosensitive pixels and the green filter area covers the other two; or

wherein the white filter area covers three of the four photosensitive pixels and the green filter area covers the other one.

4. The image sensor of any one of claims 1-3, wherein the image sensor further comprises a control module, and wherein the control module is configured to control the photosensitive pixel array to be exposed by row.

5. The image sensor of claim 4, wherein the image sensor further comprises a

register; wherein the control module is configured to collect outputs of the photosensitive pixels of row k and row k+1 in turn which have been exposed and to store the outputs into the register, wherein k=2n-1, n is a positive integer, and k+1 is less than or equal to the amount of the rows of the photosensitive pixel array.

6. The image sensor of any one of claims 1-5, wherein the image sensor further comprises an ADC array which comprises a plurality of ADCs; and wherein each of the ADCs connects to one photosensitive pixel.

7. The image sensor of any one of claims 1-6, wherein the image sensor further comprises a micro-lens array; wherein the micro-lens array comprises a plurality of micro-lens and wherein each micro-lens corresponds to one photosensitive pixel.

8. An imaging device, comprising:

the image sensor of any one of claims 1-7; and

an image signal processor, wherein the image signal processor is configured to read and to process outputs of the photosensitive pixel array of the image sensor to obtain pixel values of merged pixels and further to obtain merged images.

9. The imaging device of claim 8, wherein the filter units comprise white filter areas and non-white filter areas, the image signal processor is further configured to add the outputs of the photosensitive pixels corresponding to the white filter areas together to obtain first pixel values of merged pixels, and to add the outputs of the photosensitive pixels corresponding to the non-white filter areas together to obtain second pixel values of merged pixels.

10. A mobile terminal, comprising: the imaging device of any one of claims 8-9.

11. The mobile terminal of claim 10, wherein the mobile terminal may be a cell phone.

12. The mobile terminal of claim 11, wherein the imaging device may be a front camera of the mobile terminal.

13. The mobile terminal of any one of claims 10-12, wherein further comprising a CPU and an external memory, wherein the CPU is configured to control the external memory to store the merged images.

14. The mobile terminal of any one of claims 10-13, further comprising a display device, wherein the CPU is configured to control the display device to display the merged images.

15. An imaging method of the image sensor of any one of claims 1-7, comprising:

reading outputs of the photosensitive unit array; and

calculating pixel values of merged pixels according to the outputs of the photosensitive pixels of the merged pixel in order to obtain a merged image.

16. The imaging method of claim 15, wherein each filter unit comprises 2*2 photosensitive pixels; wherein the step of calculating pixel values of merged pixels according to the outputs of the photosensitive pixels of the merged pixel in order to obtain a merged image further comprises:

collecting and storing the outputs of the photosensitive pixels of row k and row k+1 into the register, wherein k=2n-1, n is a positive integer, and k+1 is less than or equal to the amount of the rows of the photosensitive pixel array; and

extracting the outputs of the photosensitive pixels of row k and row k+1 from the register to obtain pixel values of merged pixels.

17. The imaging method of any one of claims 15-16, wherein when the filter units comprise white filter areas and non-white filter areas, the pixel values of merged

pixels comprise first pixel values corresponding to white filter areas and second pixel values corresponding to non-white filter areas, the step of calculating pixel values of merged pixels according to the outputs of the photosensitive pixels of the merged pixel in order to obtain a merged image further comprises:

adding the outputs of the photosensitive pixels corresponding to white filter areas together to obtain first pixel values of merged pixels; and

adding the outputs of the photosensitive pixels corresponding to non-white filter areas together to obtain second pixel values of merged pixels.

18. The imaging method of any one of claims 15-17, wherein each ADC connects to one photosensitive pixel，the imaging method further comprises:

converting analog signal outputs of the photosensitive pixel into digital signal outputs; and

calculating the pixel value of the merged pixel according to the digital signal outputs of the photosensitive pixels of the same merged pixel.