

程式作業 (7)

撰寫高通型濾波器 Prewitt filter 與 Sobel filter 兩個程式，對自己拍的人頭照影像進行濾波處理，輸出各結果以比較其效果。

Prewitt operator:

(1) for detecting horizontal&vertical edges (2) for detecting diagonal edges

$$\begin{array}{|c|c|c|} \hline -1 & -1 & -1 \\ \hline 0 & 0 & 0 \\ \hline 1 & 1 & 1 \\ \hline \end{array} + \begin{array}{|c|c|c|} \hline -1 & 0 & 1 \\ \hline -1 & 0 & 1 \\ \hline -1 & 0 & 1 \\ \hline \end{array} \qquad \begin{array}{|c|c|c|} \hline 0 & 1 & 1 \\ \hline -1 & 0 & 1 \\ \hline -1 & -1 & 0 \\ \hline \end{array} + \begin{array}{|c|c|c|} \hline -1 & -1 & 0 \\ \hline -1 & 0 & 1 \\ \hline 0 & 1 & 1 \\ \hline \end{array}$$

Sobel operator:

(1) for detecting horizontal&vertical edges (2) for detecting diagonal edges

$$\begin{array}{|c|c|c|} \hline -1 & -2 & -1 \\ \hline 0 & 0 & 0 \\ \hline 1 & 2 & 1 \\ \hline \end{array} + \begin{array}{|c|c|c|} \hline -1 & 0 & 1 \\ \hline -2 & 0 & 2 \\ \hline -1 & 0 & 1 \\ \hline \end{array} \qquad \begin{array}{|c|c|c|} \hline 0 & 1 & 2 \\ \hline -1 & 0 & 1 \\ \hline -2 & -1 & 0 \\ \hline \end{array} + \begin{array}{|c|c|c|} \hline -2 & -1 & 0 \\ \hline -1 & 0 & 1 \\ \hline 0 & 1 & 2 \\ \hline \end{array}$$