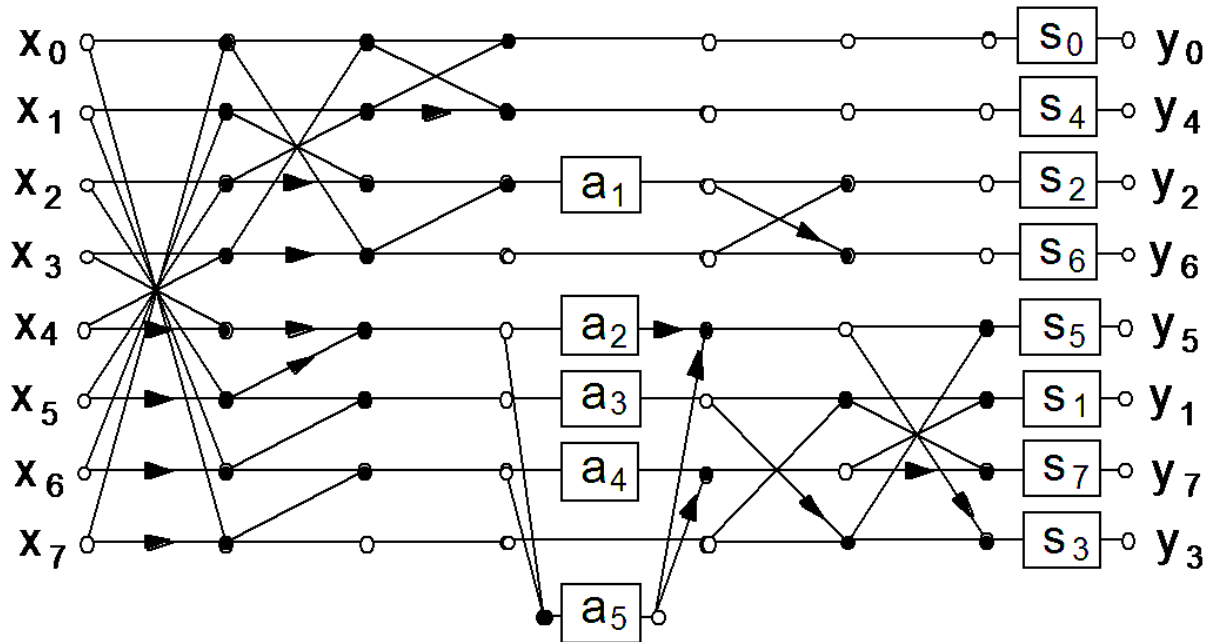


Fast DCT algorithm II

- Signal flow graph for fast (scaled) 8-DCT [Arai, Agui, Nakajima, 1988]



only 5 + 8
multiplications
(direct matrix
multiplication:
64 multiplications)

Multiplication:

$$u \circ \boxed{m} \circ m \cdot u$$

Addition:

$$\begin{array}{c} u \circ \\ v \circ \end{array} \rightarrow u+v$$

$$\begin{array}{c} u \circ \\ v \circ \end{array} \rightarrow u-v$$

$$a_1 = C_4$$

$$a_2 = C_2 - C_6$$

$$a_3 = C_4$$

$$a_4 = C_6 + C_2$$

$$a_5 = C_6$$

$$s_0 = \frac{1}{2\sqrt{2}}$$

$$s_k = \frac{1}{4C_k} \quad k = 1, \dots, 7$$

$$C_k = \cos\left(\frac{\pi}{16}k\right)$$

