Optical flow

Let us consider an "ideal" mono dimensional edge taken at two consecutive dates (t-1) and (t) of a moving picture. The luminance associated with these pixels at the two dates are indicated in the under table,

position	0	1	2	3	4	5	6	7	8	9
Time (t-1)	110	100	120	170	180	220	200	180	180	220
Time (t)	100	110	90	120	180	190	200	220	180	220

Using a pel-recursive algorithm of motion estimation (simplified version of it), determine the horizontal displacement at the first seven positions of the edge.

Use the following hypotheses:
*   *- Motion and gradients equal to zero at the border of image;*
*   *- Interpolation of pixels by approximation of the motion to the closest digit;*
*   *- Prediction based on the resulting displacement obtained at the previous pixel.*

Specify your gain and stop criterion.

Can we determine the global motion of this contour from the set of pixel displacements? If so, what is this displacement?