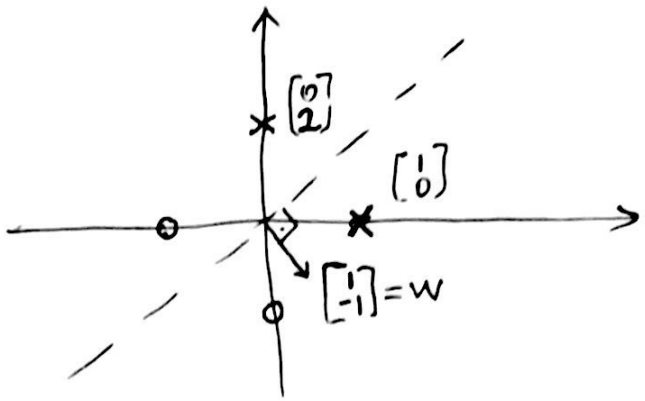


Given the data $\left(\begin{bmatrix}1\\0\end{bmatrix},1\right), \left(\begin{bmatrix}0\\2\end{bmatrix},1\right), \left(\begin{bmatrix}0\\-1\end{bmatrix},-1\right), \left(\begin{bmatrix}-1\\0\end{bmatrix},-1\right)$

The equation of line $w=\begin{bmatrix}1\\-1\end{bmatrix}$ $\quad w^T x=0 \Rightarrow 1x_1 - x_2 = 0$

Let $x=\begin{bmatrix}1\\0\end{bmatrix}$, x is on the "right" side.

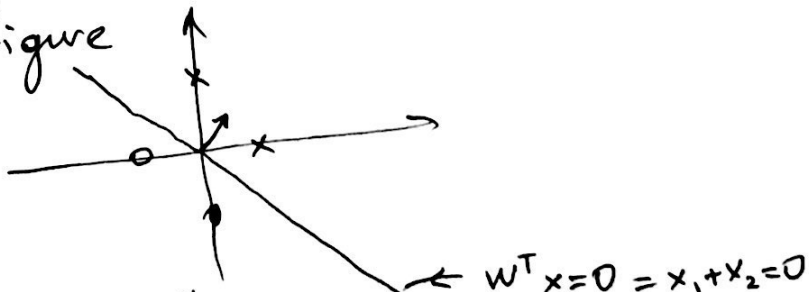
Do nothing.

Let $x=\begin{bmatrix}0\\2\end{bmatrix}$, x is on the "wrong" side.

So we update $w \Leftarrow w + x$

$w=\begin{bmatrix}1\\-1\end{bmatrix}+\begin{bmatrix}0\\2\end{bmatrix}=\begin{bmatrix}1\\1\end{bmatrix}=\begin{bmatrix}1\\1\end{bmatrix}$

Here is the new figure



Let $x=\begin{bmatrix}0\\-1\end{bmatrix}$. It is in the "right" side $\Rightarrow$ do nothing.

Let $x=\begin{bmatrix}-1\\0\end{bmatrix}$. It " " " " " $\Rightarrow$ " ".

Let $x=\begin{bmatrix}1\\0\end{bmatrix}$. " " " " " " $\Rightarrow$ " "

Let $x=\begin{bmatrix}0\\2\end{bmatrix}$ " " " " " " $\Rightarrow$ " "

Stop