Linear Model: The Med-Med line (MML)

John Tukey invents the med-med line as a line of fit more resistant to outliers.

Algorithm to obtain the med-med line:

Given a set of $n$ data points $S = \{(x_i, y_i) : 1 \leq i \leq n\}$ we proceed to:

1. Sort the data points by $x$-coordinates.

2. Divide the ordered set into three groups $G_1, G_2, \& G_3$, such that

   $n = \begin{cases} 
   3k, & \text{then } |G_1| = |G_2| = |G_3| = k \\
   3k + 1, & \text{then } |G_2| = k + 1, |G_1| = |G_3| = k \\
   3k + 2, & \text{then } |G_1| = |G_3| = k + 1, |G_2| = k 
   \end{cases}$

3. For each group $G_i$ find $(x_{mi}, y_{mi})$, where $x_{mi}$ ($y_{mi}$) is the median of the $x$-coordinates ($y$-coordinates) of $G_i$, $i = 1, 2, 3$.

4. Find the equation of the line $L$ through $(x_{m1}, y_{m1}) \& (x_{m3}, y_{m3})$.

5. Shift the line $L$ vertically $\frac{1}{3}$ of the way towards $(x_{m2}, y_{m2})$. 