**private Pair<Double, Integer> scanSignalIntervals(double[] x, int index,**

**int length, int intervalMin, int intervalMax) {**

**double optimalValue = Double.MAX\_VALUE;**

**int optimalInterval = 0;**

**// distance between min and max range value can be big**

**// limiting it to the fixed value**

**final int maxAmount = 30;**

**int steps = intervalMax - intervalMin;**

**if (steps > maxAmount)**

**steps = maxAmount;**

**else if (steps <= 0)**

**steps = 1;**

**// trying all intervals in the range to find one with**

**// smaller difference in signal waves**

**for (int i = 0; i < steps; i++) {**

**int interval = intervalMin + (intervalMax - intervalMin) \* i / steps;**

**double sum = 0;**

**for (int j = 0; j < length; j++) {**

**double diff = x[index + j] - x[index + j + interval];**

**sum += diff \* diff;**

**}**

**if (optimalValue > sum) {**

**optimalValue = sum;**

**optimalInterval = interval;**

**}**

**}**

**return new Pair<>(optimalValue, optimalInterval);**

**}**