Algorithm 1: Find local extremum

Data: minimum valid slope T, minimum detect local count C, buffer size L, sequence $X_1, ..., X_N$

Result: local extremum E

Initialize $count \leftarrow 0$;
Initialize $E \leftarrow 0$;
for $i \leftarrow 1$ **to** $L - 1$ **do**
    if $N - i - 2 < 0$ **then break**;
    $D_1 \leftarrow X_N - X_{N-i}$;
    $D_2 \leftarrow X_N - X_{N-i-1}$;
    $D_3 \leftarrow X_N - X_{N-i-2}$;
    if $E == 0$ **then** `/* local extremum E not updated yet. */`
        if $\min\{D_3, D_2, D_1\} > T$ *or* $\max\{D_3, D_2, D_1\} < -T$ **then**
            $E \leftarrow D_1$;
        continue;
    if $0 < E < D_1$ *or* $D_1 < E < 0$ **then**
        $E \leftarrow D_1$;
        $count \leftarrow 0$;
    else
        $count \leftarrow count + 1$;
    if $count > C$ **then** `/* Conditions satisfied for C times. */`
        break;
end
return E