Algorithm 1 Algorithm executed by an OBU.

Input: ID from RSU.
Output: Local SCT from the OBU.

1: $total_{RS} \leftarrow ((total_{RSU} - 1) * total_D)$
2: **while** true **do**
3:     Search for known RSU_{id}
4:     **if** RSU is known **then**
5:        $currentRSU \leftarrow RSU_{id}$
6:        Try to connect
7:        **if** it is connected **then**
8:           **while** connected **do**
9:             **if** OBU passed by RSU **then**
10:                Calculate the mean speed
11:                Analyze the SCT to calculate the variance and TTL
12:                $iteratorLines_{SCT} \leftarrow 1$
13:                **while** $iteratorLines_{SCT} < total_{RS}$ **do**
14:                   **if** $RS_{id} >= PRS_{id}$ **and** $RS_{id} <= lastRS_{opDir_{id}}$ **then**
15:                      **if** $currentCond < previousCond$ **then**
16:                         Calculates the variance of speed on the road segment
17:                         Calculates the TTL, adding the value of the variance
18:                      $iteratorLines_{SCT} \leftarrow iteratorLines_{SCT} + 1$
19:                Update local SCT
20:                Send the updated SCT to the associated RSU
21:                Wait for an updated SCT
22:                Receive the updated SCT from the RSU
23:                $iteratorLines_{SCT} \leftarrow 1$
24:                **while** $iteratorLines_{SCT} < total_{RSU}$ **do**
25:                   $currentCond_{Local} \leftarrow currentCond_{Received}$
26:                   $previousCond_{Local} \leftarrow previousCond_{Received}$
27:                   $TTL_{Local} \leftarrow TTL_{Received}$
28:                   $maxTTL_{Local} \leftarrow maxTTL_{Received}$
29:                   $obstLane_{Local} \leftarrow obstLane_{Received}$
30:                   $timer_{Local} \leftarrow timer_{Received}$
31:                   $iteratorLines_{SCT} \leftarrow iteratorLines_{SCT} + 1$
32:                Disconnect
33:                $previousAP \leftarrow currentAP$
34:                $currentAP \leftarrow \{\}$
35:        **else**
36:           Try to connect with the RSU
37:     **else**
38:        Search for known RSU_{id}

Algorithm 2 Algorithm executed in the RSU.

Input: SCT sent by the OBU.
Output: The overall traffic condition of all segments.

1: $total_{RS} \leftarrow ((total_{RSU} - 1) * total_D)$
2: **while** true **do**
3:     Connect
4:     Wait for an updated SCT
5:     Receive the SCT from the OBU
6:     $iteratorLine_{SCT} \leftarrow 1$
7:     **while** $iteratorLine_{SCT} < total_{RS}$ **do**
8:         **if** $TTL_{Local} = 0$ **then**
9:             Updates all road segments traveled by the OBU (including parallel)
10:             **if** RS_{id} was traveled by the OBU **then**
11:                 **if** $previousCond_{Local} = zero$
12:                     $previousCond_{temporary} = currentCond_{Received}$
13:                 **else**
14:                     $previousCond_{temporary} = currentCond_{Local}$
15:                 $currentCond_{Local} \leftarrow currentCond_{Received}$
16:                 $previousCond_{Local} \leftarrow previousCond_{temporary}$
17:                 $TTL_{Local} \leftarrow TTL_{Received}$
18:                 **if** $RS_{id} = RS_{id_{curTraveledOBU}}$ **then**
19:                     $maxTTL_{Local} \leftarrow TTL_{Received}$
20:                 **else**
21:                     $maxTTL_{Local} \leftarrow maxTTL_{Received}$
22:                 $obstLane_{Local} \leftarrow obstLane_{Received}$
23:                  $timer_{Local} \leftarrow timer_{Received}$
24:             **else**
25:                 **if** RS_{id} is parallel to a road segment already traveled by the OBU **then**
26:                     Updates all entries in the local SCT of the RSU;
27:         **else**
28:             **if** $TTL_{Local} < TTL_{Receiv}$ **or** $RS_{id} = RS_{id_{curTraveledOBU}}$ **then**
29:                 $previousCond_{temporary} = currentCond_{Local}$
30:                 **if** $RS_{id} = RS_{id_{curTraveledOBU}}$ **then**
31:                   $currentCond_{Local} \leftarrow harmonicMean_{speedRS}$
32:                   $previousCond_{Local} \leftarrow previousCond_{temporary}$
33:                   **if** $TTL_{Received} < maxTTL_{Local}$ **then**
34:                     $TTL_{Local} \leftarrow maxTTL_{Local}$
35:                     $maxTTL_{Local} \leftarrow maxTTL_{Local}$
36:                 **else**
37:                     $TTL_{Local} \leftarrow TTL_{Received}$
38:                     $maxTTL_{Local} \leftarrow TTL_{Received}$
39:                 $obstLane_{Local} \leftarrow obstLane_{Received}$
40:                 $timer_{Local} \leftarrow timer_{Received}$
41:             **else**
42:                 Updates all entries in the local SCT of the RSU, assigning as previous condition
43:                 the current condition of each road segment ($previousCond_{temporary}$)
44:         $iteratorLine_{SCT} \leftarrow iteratorLine_{SCT} + 1$
45:     Send updated SCT to the OBU

then