

# A Minor Issue in Line 8, Algorithm 1, RouteNet


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**Algorithm 1** Algorithm of RouteNet for #DRV Prediction

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**Input:** Number of training placements:  $N$ , Features:  $\{X_i \in \mathbb{R}^{w \times h \times 3} \mid i \in [1, N]\}$ , Targets:  $\{y_i \in \mathbb{R} \mid i \in [1, N]\}$

**Preprocess:**

- 1: **for** each int  $i \in [1, N]$  **do**
- 2:     Resize  $X_i \in \mathbb{R}^{w \times h \times 3}$  into  $X_i^{\#DRV} \in \mathbb{R}^{224 \times 224 \times 3}$
- 3: Find 25%, 50%, 75% quantizes of  $y_i$ :  $q_1, q_2, q_3$
- 4: **for** each int  $i \in [1, N]$  **do**
- 5:      $C_i \leftarrow 0$
- 6:     **for** each int  $t \in [1, 3]$  **do**
- 7:         **if**  $y_i > q_t$  **then**
- 8:              $C_i \leftarrow t$ , **break**  **continue**
- 9: Form dataset  $\{(X_i^{\#DRV}, C_i) \mid i \in [1, N]\}$
- 10: Training set  $\{(X_i^{\#DRV}, C_i) \mid C_i = 0 \text{ or } C_i = 3\}$

**Training:**

- 1: Get pretrained ResNet18  $f_{Res} : \mathbb{R}^{224 \times 224 \times 3} \rightarrow \mathbb{R}^{1000}$
- 2: Replace output layer, s.t.  $f_{\#DRV} : \mathbb{R}^{224 \times 224 \times 3} \rightarrow \mathbb{R}$
- 3: Choose MSE as loss function, SGD for optimization
- 4: Train  $f_{\#DRV}$  with preprocessed dataset for  $\sim 30$  epochs

**Output:**  $f_{\#DRV}$  estimating #DRV level

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## Task

- In the preprocess stage, the algorithm attempts to categorize the features  $X_i$  into 4 group,  $C_0, C_1, C_2$  and  $C_3$ , according to their labels  $y_i$ , the number of design rule violation (#DRV).

## Issue

- The "for" loop in lines 6 to 8 is designed to iterate through each  $q_t$ . When the value of  $y_i$  exceeds  $q_t$ , it is categorized into group  $C_t$ .
- However, the presence of the "break" command in line 8 signifies a premature exit from the "for" loop initiated in line 6. This means that as soon as  $y_i$  surpasses  $q_1$ , it is assigned to  $C_1$ , and the algorithm abruptly terminates the "for" loop from line 6 onwards. As a result, the algorithm skips the potential categorization of  $y_i$  into  $C_2$  or  $C_3$ .

## Remedy

- The "break" command in line 8 should be substituted with "continue" indicating the continuation of the "for" loop with an increment of  $t$  by 1. This adjustment ensures that the prospective classification of  $y_i$  into  $C_2$  or  $C_3$  is not skipped.

# Some Minor Typos in APOLLO

## In line 9-10, section 6

“interface”, power computation and T-cycle average. The interface latches the input signals using the register interface and

## In line 13, section 6

timing impact from OPM on the original design. The interface

## In line 25, section 6

The power computation component calculates the intermediate

## In line 29-30, section 6

intermediate values are computed on a cycle-by-cycle basis, a T-cycle average component computes the average power over T

## In line 31-32, section 7.4

as “Vector Execution” (19 out of 159), “Issue” (36 out of 159), and “Load Store” (28 out 159). These power proxies are critical indicators

## Issue

- I have noticed that some of the left and right quotation marks in APOLLO don't seem to match properly. This might be due to a configuration issue with LaTeX.