A Minor Issue in Line 8, Algorithm 1, RouteNet

Algorithm 1 Algorithm of RouteNet for #DRV Prediction

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** $\longrightarrow$ **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 ~30 epoches

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

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.