DSNAS: Direct Neural Architecture Search without Parameter Retraining
Supplementary Material

Shoukang Hu*[1], Sirui Xie*[2], Hehui Zheng[3], Chunxiao Liu[4], Jianping Shi[4], Xunying Liu[1], Dahua Lin[1] ⁑

1. Detailed Settings of Experimental Results

Data Pre-processing We employ the commonly used pre-processing techniques in our experiments: A 224x224 crop is randomly sampled from an image or its horizontal flip, with a normalization on the pixel values per channel.

2. Details about the architectures
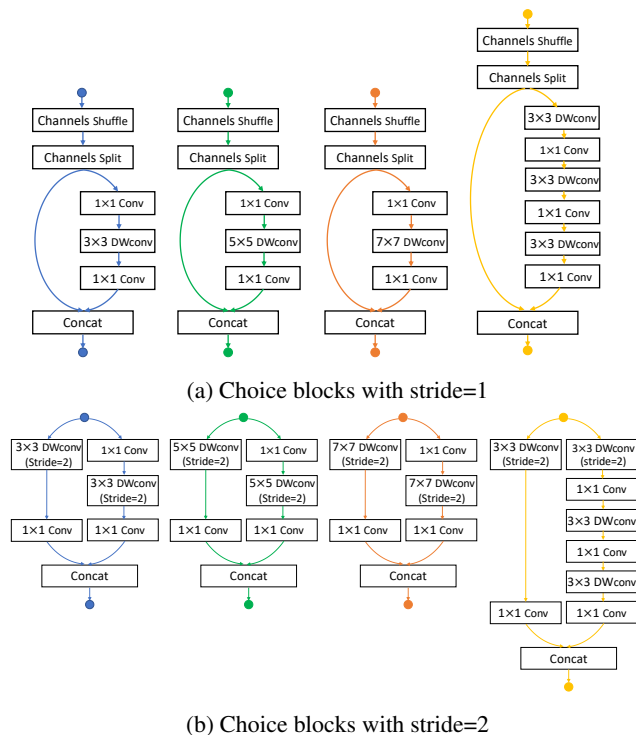
Structures of choice blocks [1]

(a) Choice blocks with stride=1

(b) Choice blocks with stride=2

Figure 1: Choice blocks in search space. From left to right: Choice_3, Choice_5, Choice_7, Choice_x.

Supernet architecture

Table 1: Supernet architecture. CB - choice block. GAP - global average pooling. FC - fully connected layer. Each line describes a sequence of 1 or more identical layers, repeated *Repeat* times. All layers in the same sequence have the same number of output channels. The first layer of each sequence has a stride *Stride* and all others use stride 1.

Input	Block	Channels	Repeat	Stride
$224^2 \times 3$	3×3 Conv	16	1	2
$112^2 \times 16$	CB	64	4	2
$56^2 \times 64$	CB	160	4	2
$28^2 \times 160$	CB	320	8	2
$14^2 \times 320$	CB	640	4	2
$7^2 \times 640$	1×1 Conv	1024	1	1
$7^2 \times 1024$	GAP	-	1	-
1024	FC	1000	1	-

Structures of searched architectures

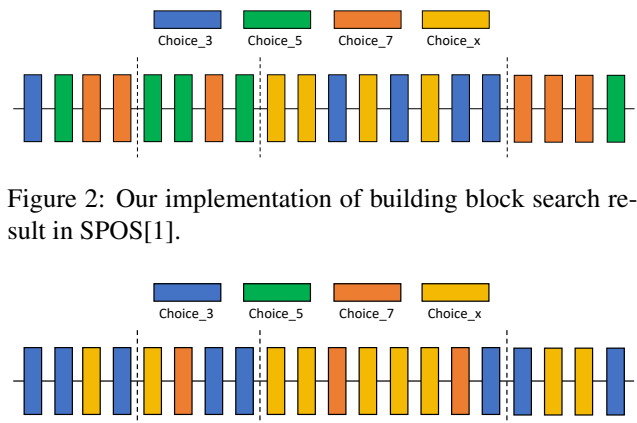Figure 2: Our implementation of building block search result in SPOS[1].

Figure 3: Building block search result in Sec. 4. based on one-stage *searching* process, i.e., `DSANSsearch240`.

References

[1] Zichao Guo, Xiangyu Zhang, Haoyuan Mu, Wen Heng, Zechun Liu, Yichen Wei, and Jian Sun. Single path one-shot neural architecture search with uniform sampling. *arXiv preprint arXiv:1904.00420*, 2019.

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*Equal contribution. Work done at SenseTime Research.

†1. The Chinese Univsersity of Hong Kong; 2. University of California, Los Angeles; 3. Cambridge University; 4. SenseTime Research.

[1]We follow the setting including choice blocks used in the released implementation of SPOS[1].