## 学习汇报



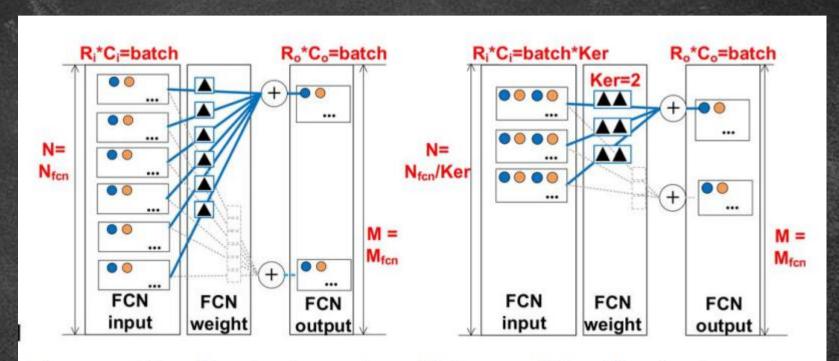


北大ICCAD

### 2点贡献:

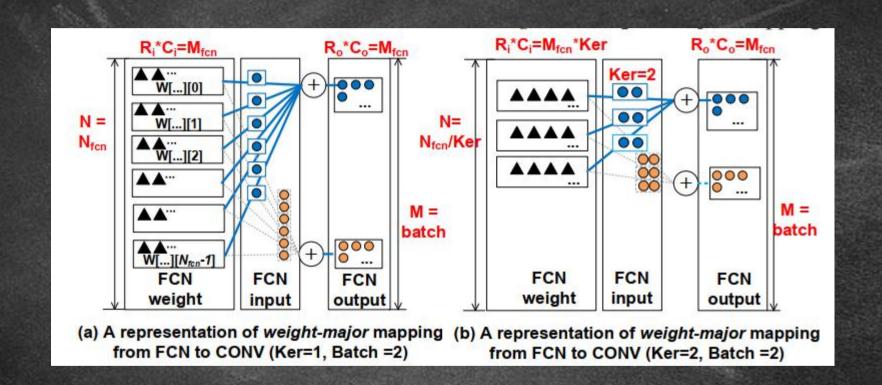
- 1, UNIFORMED CNN REPRESENTATION。 统一的CNN表示。
- 2,通过动态随机存取存储器布局重组优化带宽。

#### UNIFORMED CNN REPRESENTATION:输入映射

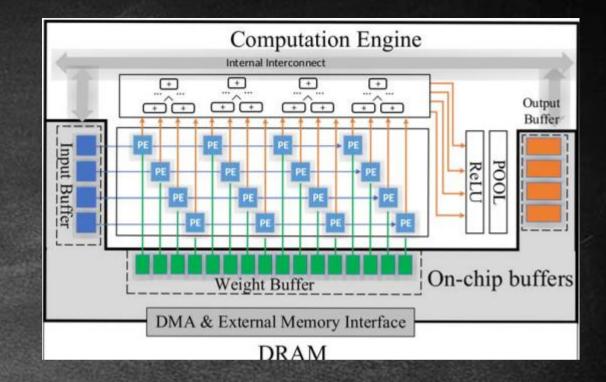


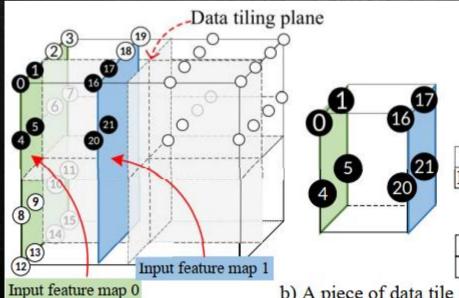
- c) A representation of *input-major* mapping from FCN to CONV (Ker=1, Batch =2)
- (d) A representation of input-major mapping from FCN to CONV (Ker=2, Batch =2)

#### UNIFORMED CNN REPRESENTATION: 权重映射



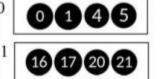
	Uniformed	Conv	FCN-Input	FCN-Weight		
Input FM #	N	$N_{conv}$	$N_{fcn}/ker$	$N_{fcn}/ker$		
Input FM size	$R_i \cdot C_i$	$R_{conv}^{in} \cdot C_{conv}^{in}$	batch · ker	$M_{fcn} \cdot ker$		
Output FM #	M	$M_{conv}$	$M_{fcn}$	batch		
Output FM size	$R_o \cdot C_o$	$R_{conv}^{out} \cdot C_{conv}^{out}$	batch	$M_{fcn}$		
Kernel size	$K_1 \cdot K_2$	$K_1 \cdot K_2$	ker	ker		
Stride	$S_1 \cdot S_2$	$S_1 \cdot S_2$	ker	ker		





a) A logical 3D data layout

Data tile of input feature map 0 is buffered in BRAM Bank 0 Data tile of input feature map 1 is buffered in BRAM Bank 1



c) Physical data layout in on-chip buffer per BRAM bank

Data	0	1	 4	5	 	16	17	 20	21
DRAM Addr.	x0	x4	 x10	x14	 	x40	x44	 x50	x54

d) Row-major data layout in DRAM space

Data					4					
DRAM Addr.	x0	x4	x8	xc	x10	x14	x18	x1c	 	 

b) A piece of data tile (input feature maps)

e) Proposed data layout in DRAM space

# 年前计划

年前计划:论文,视频。UG902实验