

## (b) Common Impletation

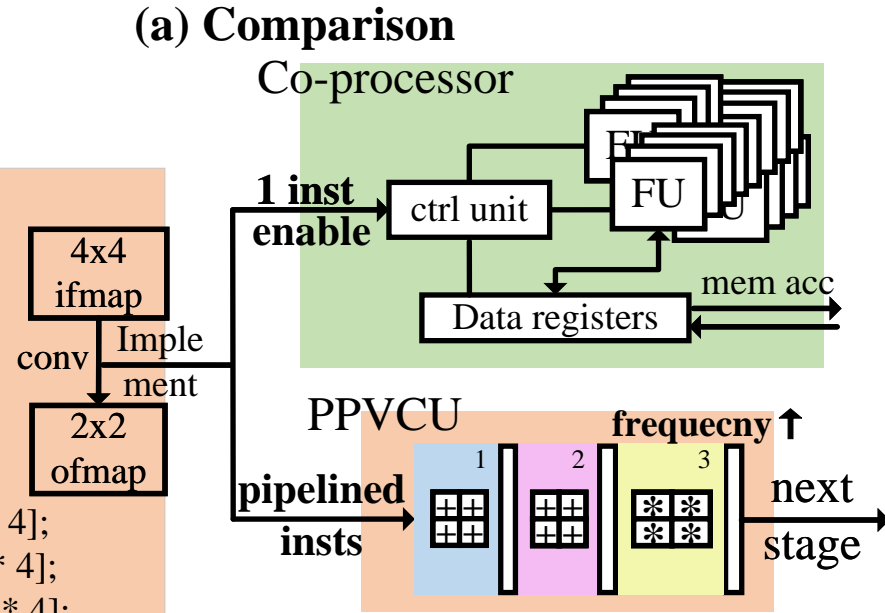
```
for (i = 0; i < 4; i++){
    BTd[i] = d[0 + i] - d[8 + i];
    BTd[4 + i] = d[4 + i] + d[8 + i];
    BTd[8 + i] = -d[4 + i] + d[8 + i];
    BTd[12 + i] = d[4 + i] - d[12 + i]; }
```

```
for (i = 0; i < 4; i++){
    V[0 + i * 4] = BTd[0 + i * 4] - BTd[2 + i * 4];
    V[1 + i * 4] = BTd[1 + i * 4] + BTd[2 + i * 4];
    V[2 + i * 4] = -BTd[1 + i * 4] + BTd[2 + i * 4];
    V[3 + i * 4] = BTd[1 + i * 4] - BTd[3 + i * 4]; }
```

```
For (i=0;i<16;i++){
    UV[i] = U[i] * V[i]; }
```

```
for (int i = 0; i < 4; i++){
    ATUV[i] = UV[0 + i] + UV[4 + i] + UV[8 + i];
    ATUV[4 + i] = UV[4 + i] - UV[8 + i] - UV[12 + i]; }
```

```
Y[0] = (ATUV[0] + ATUV[1] + ATUV[2]);
Y[1] = (ATUV[1] - ATUV[2] - ATUV[3]);
Y[2] = (ATUV[4] + ATUV[5] + ATUV[6]);
Y[3] = (ATUV[5] - ATUV[6] - ATUV[7]);
```



## (c) Custom Impletation

| Instruction | Operands                 |
|-------------|--------------------------|
| LD TILE     | &U, 16, vec{7-10};       |
| LD TILE     | &d, 16, vec{0-3};        |
| AAMUL       | vec7, vec2, vec0, vec0;  |
| AAMUL       | vec8, vec2, vec1, vec4;  |
| AAMUL       | vec9, vec1, vec2, vec5;  |
| AAMUL       | vec10, vec3, vec1, vec3; |
| TRIADD      | vec4, vec5, vec0, vec0;  |
| TRIADD      | vec4, vec5, vec3, vec3;  |
| OACC        | vec0, vec6, vec6;        |
| OACC        | vec3, vec6, vec6;        |
| WB TILE     | vec6, &Y;                |

Prefetch

## (d) Uarch and Dataflow of Instructions

