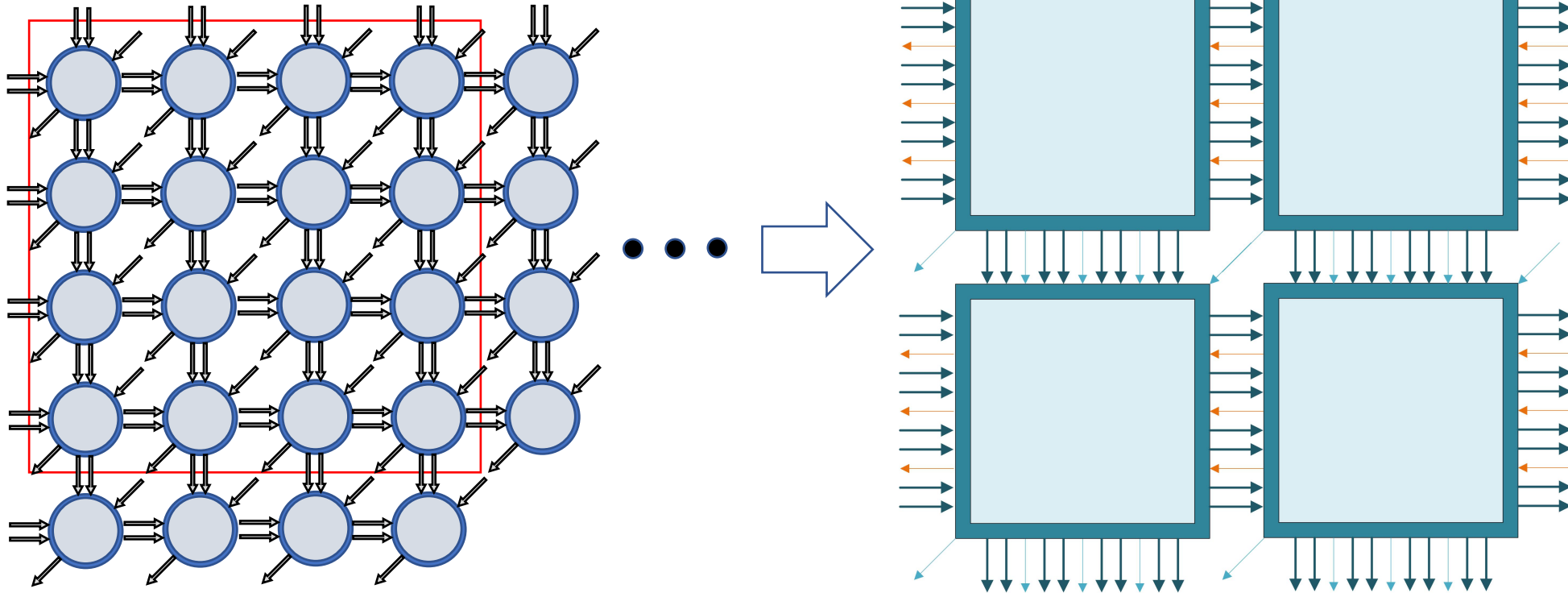


ABOUT THE PROJECT

Key words: $GF(2^m)$ field, multiplier, systolic array

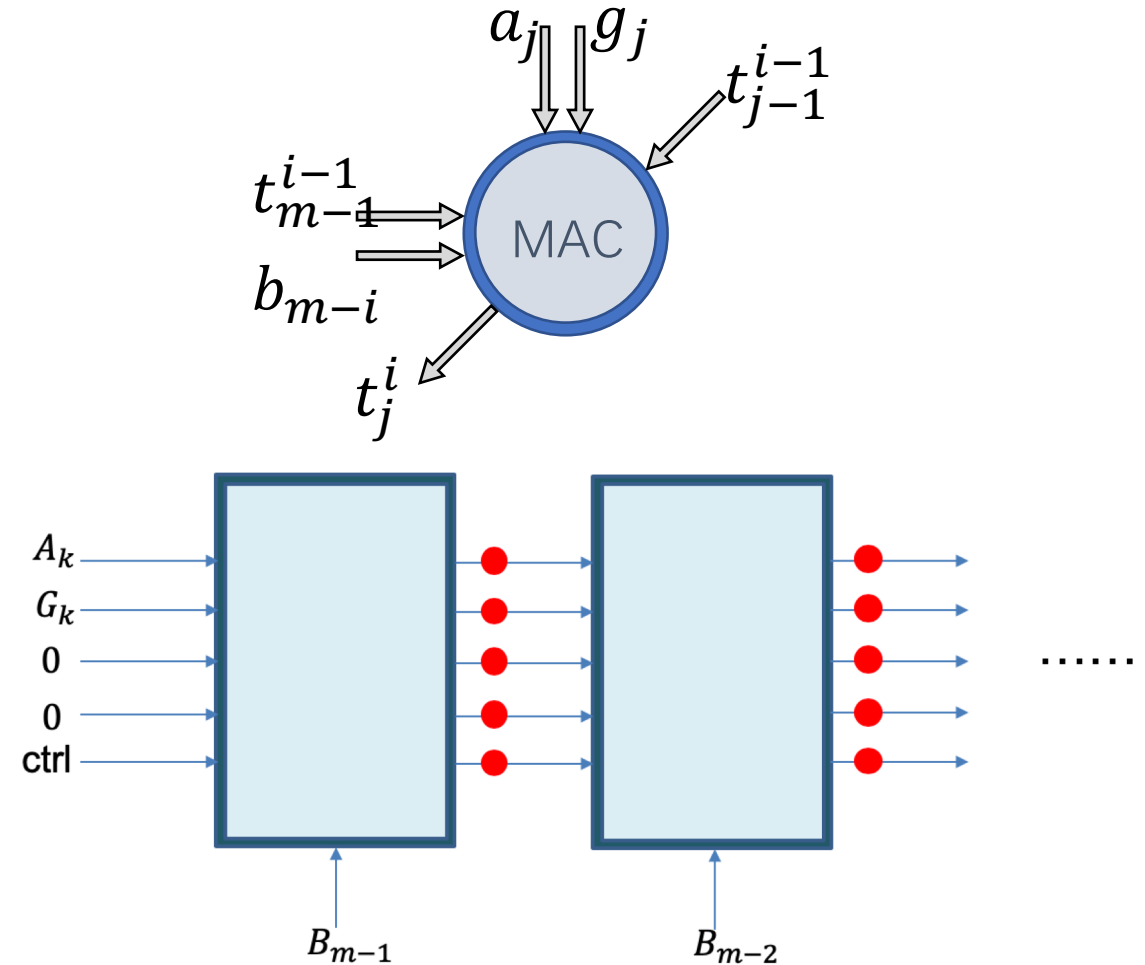
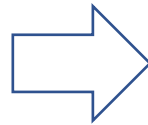
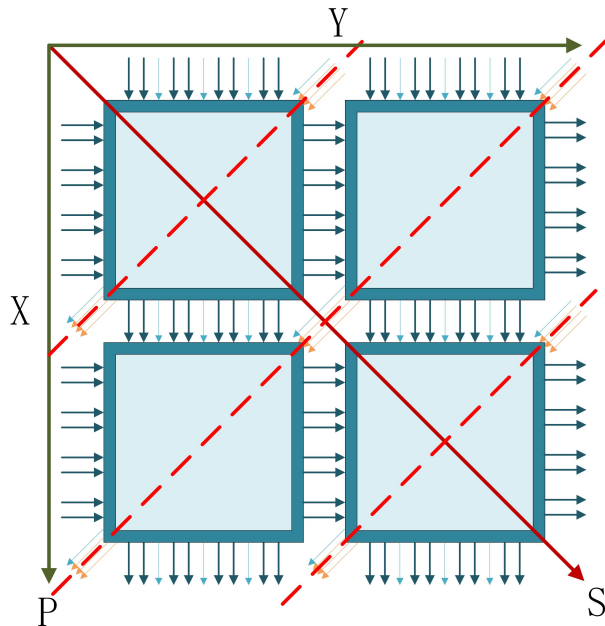


- The project is a course project of "VLSI Design of Digital Signal Processing".

DETAILS

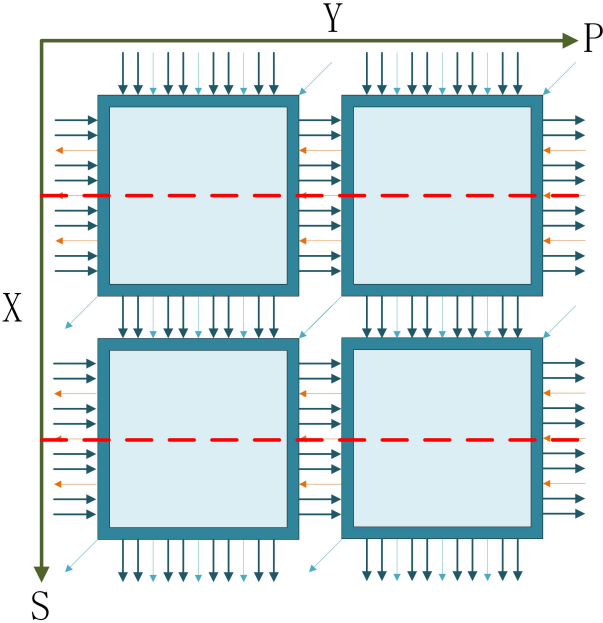
- Determine the basic unit architecture based on the knowledge of galois field and related high bits priority multiplication algorithm.
- Design systolic array multiplier with parallel-bits input. Use systolic array projection to get pipeline architecture in order to improve area and energy consumption.

$$t_j^{(i)} = a_j \cdot b_{m-i} + t_{m-1}^{(i-1)} \cdot g_j + t_{j-1}^{(i-1)}$$



EXPLORATION

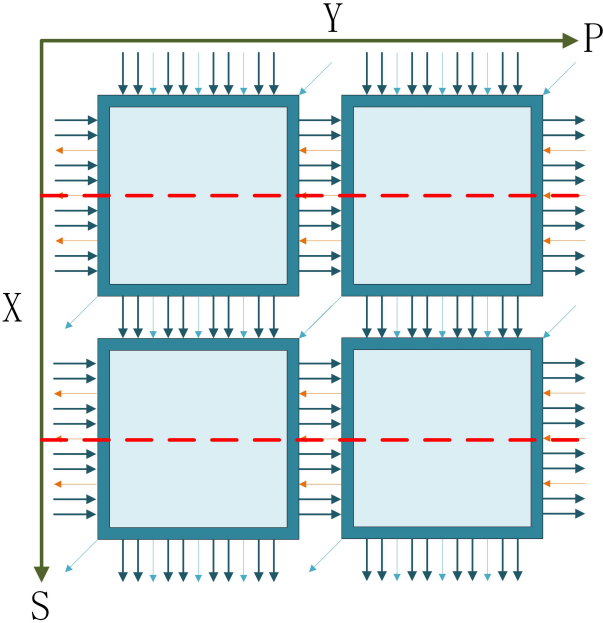
- Use DC compiler to do asic simulation and evaluate the performance of the design.
- Exploit the use of fine pipline and different projection vectors to further improve its performance.



e^T	$p^T e$	$s^T e$
$a_j, g_i, t_{j-1}^{(i-1)}(1, 0)$	0	1
$b_{m-i}, t_{m-1}^{(i-1)}(0, 1)$	1	0
$t_j^{(i)}(1, -1)$	-1	1
$t_{j+1}^{(i+1)}(0, -1)$	-1	0
HUE	1	

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Refreshed systolic array projection and the parameters