

High Level  
Data Analytics DSLs

Parallel Pattern Backend

Parallel Pattern IR

Code Motion

Fusion

**a. Pattern Strip Mining**

**b. Pattern Interchange**

Code Motion

CSE

**c. Pipelining Analysis**

Parallel Pattern IR

Hardware Lowering

Tensor

Conv

Add

Domain-specific operators

Array

Map

Map

Parallel pattern operators

Array

Map

Fused pattern operators

Array

Slice

Map

Fused and tiled pattern patterns  
with pipeline annotations

Intermediate Representation (IR)

Transformation

Analysis