- Identify Branches
- Apply Branch primitive

Remove Branches

- Unroll Loop once while maintaining control flow

Unroll Loop Once

- Identify previous basic block statically
- Apply Φ-elimination Primitive

Φ-Elimination

Loop pipelining algorithm

- Identify variables that cause WAR hazards
- Apply interchange primitive (move conflict step to beginning)
- Apply induction to move step to previous iteration
- Repeat steps 3 and 4 for all variables

Data Propagation

- Identify steps causing RAW hazards
- Apply shadow register primitive repeatedly for all variables in conflict steps

Add Shadow Registers

- Apply Superstep construction primitive
- Checks to ensure no data dependencies are violated

Superstep Construction

- Identify how and where to place branches back
- Apply branch primitive

Add Branches