Offline Synthesis of Online Dependence Testing: Parametric Loop Pipelining for HLS

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Loop pipelining with uncertain variables

```c
for (int i=LB; i<=UB; i++) {
    A[i] = A[i+m] + 1;
}
```

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Synthesis of online dependence testing

- Parametric Polyhedral Model
- Dependency analysis at compile time
- Light detection logic for safe region
Source-to-source code transformation

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- Compatible to Xilinx Vivado HLS.
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- 60% more resource usage
- More details in paper
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