Final Project Demonstration

Friday, April 30, 2021 2:48 AM

Agenda:

- The AHB Convolver will be demonstrated in-full
- During the demo, the following functionality will be shown:
    - Power-On Reset of the module
    - Loading columns of coefficients into the module
    - Loading columns of samples into the module
    - Streaming sample columns to the module
    - Indicating a new sample row to the module and loading three new sample columns
    - Retrieving the convolution results from the module

Technical Accomplishment Criteria:

- Demonstrate via test bench driven simulation that the overall design correctly allows an attached AHB-Lite SoC to receive image samples and kernel coefficients and to send back convolved values.
- Demonstrate via test bench driven simulation that the sample shift register correctly takes in inputs from the AHB-Lite.
- Demonstrate via test bench driven simulation that the coefficient shift register correctly takes in inputs from the AHB-Lite.
- Demonstrate via test bench driven simulation that the convolution correctly calculates when the coefficient and sample are loaded and sends the result to the FIFO Data buffer.
- Demonstrate via test bench driven simulation that the Data Buffer (FIFO) correctly stores data from the convolution module and correctly outputs the data.

Simulations and results prepared:

- Top-level simulation testbench with proper operation demonstrated
- Mapped version of top-level ready for demonstrated of identical mapped synthesis operation
- Testbenches ready for any top-level modules, shown at request

Tool-based results and reports ready:

- Top-level synthesis report will be shown to have:
    - No latches
    - No timing arcs
    - No significant warnings

Test Cases to be Demonstrated:

- Top Level:
    - Power-On Reset
    - Coefficient Loading
    - Sample Column Loading
    - Streaming / Convolution
    - New Sample Row Loading
    - Sample Complete
    - Result Reading and Verification
- Other modules demonstrated at request