

THE AD REMOVER

ECE532 – DIGITAL SYSTEM DESIGN

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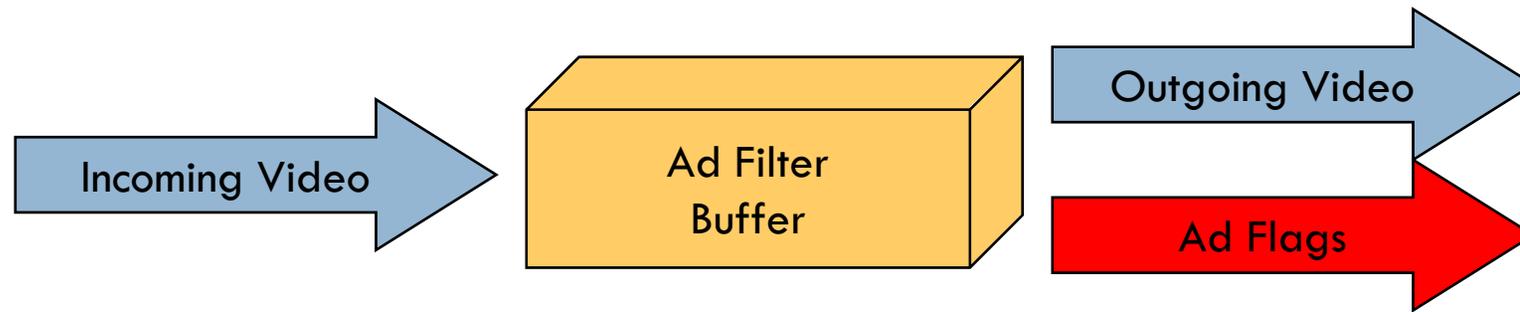
Project Goal



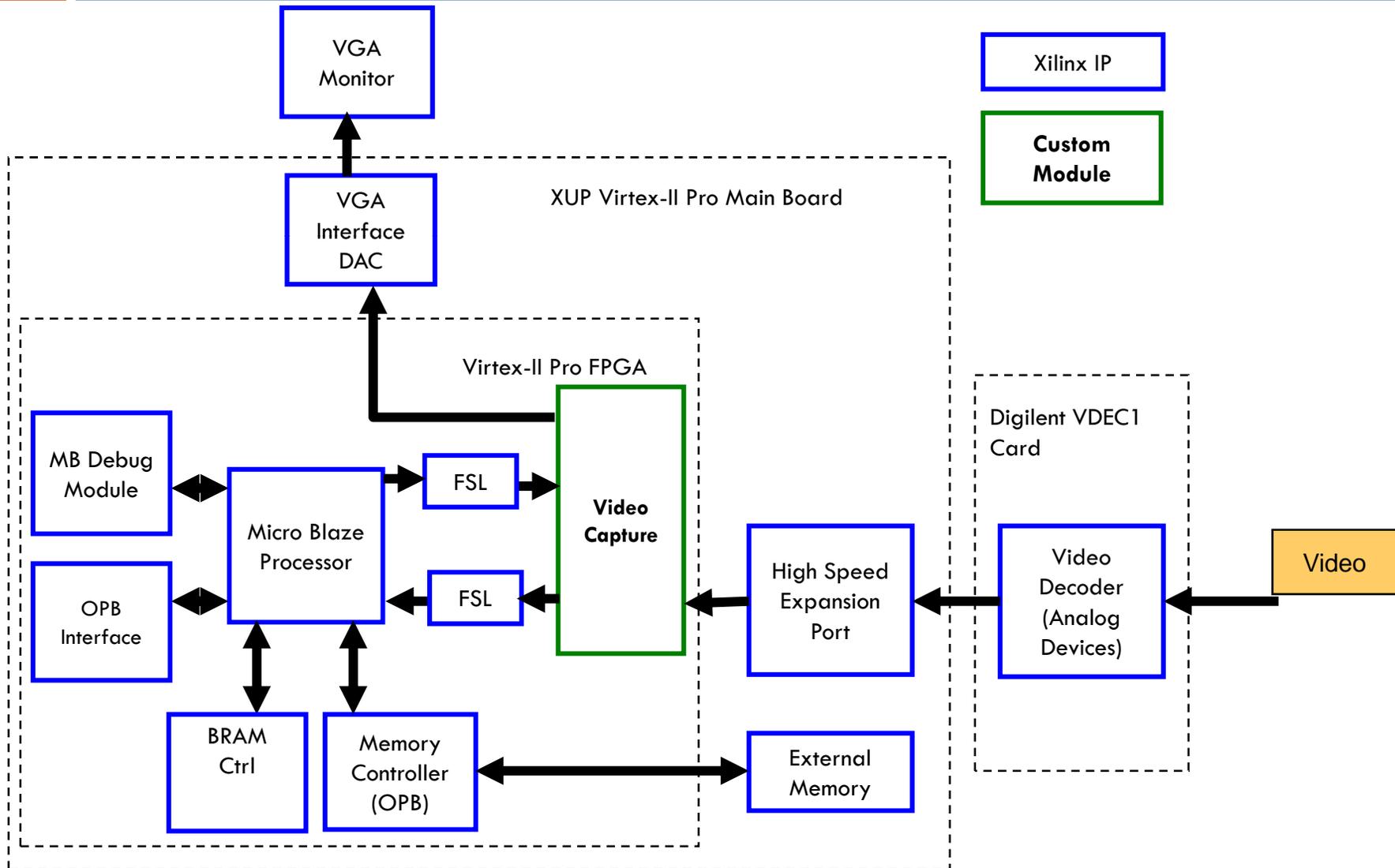
- Make TV watching experience more enjoyable
- Take a streaming TV input and “filter out” commercials
- Involve the TV viewer as little as possible

Initial Project Goal

- Initial Objectives
 - Screen Transition Flagging
 - Commercial segment Identification
 - Commercial Filtering
 - Display the filtered TV program



Initial System Design



System Design Challenges



- Large amounts of information
 - ▣ Even with greyscale video
- Latency too large with buffering to external memory
 - ▣ Frames could be sent through Microblaze to VGA

Modifications



- Remove buffering internally
- Real-time Ad flagging
- Preserves the spirit of project

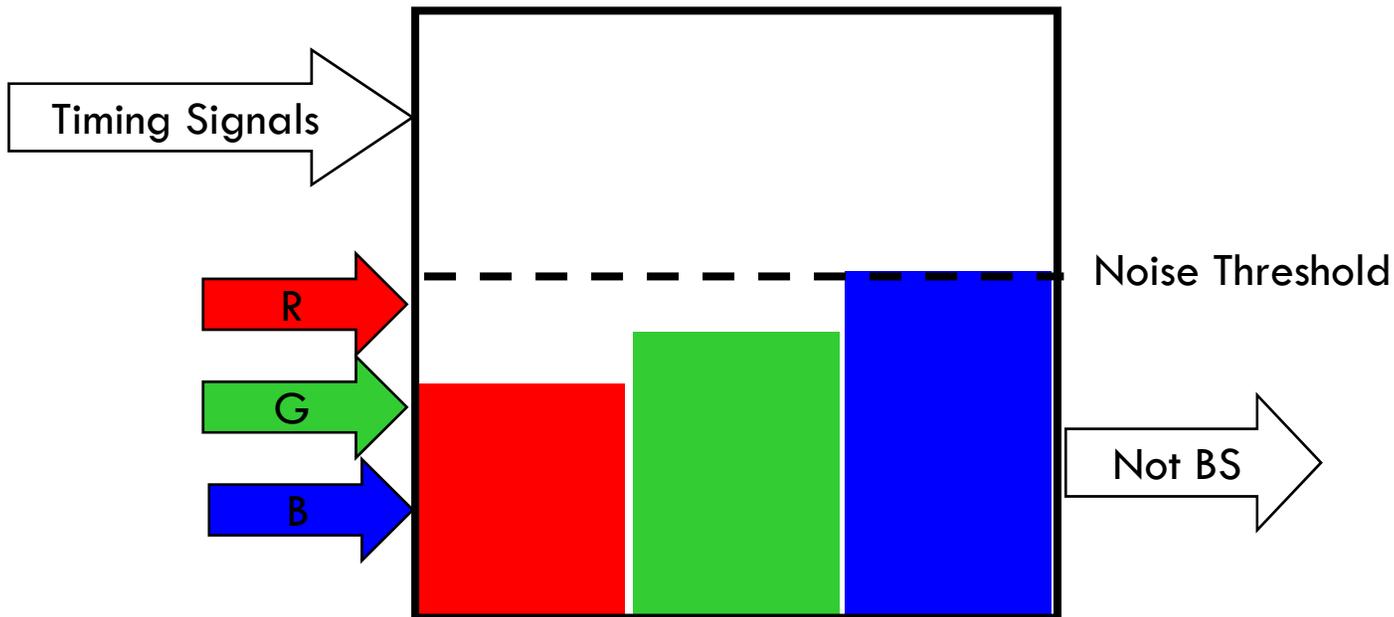
Positive Outcomes



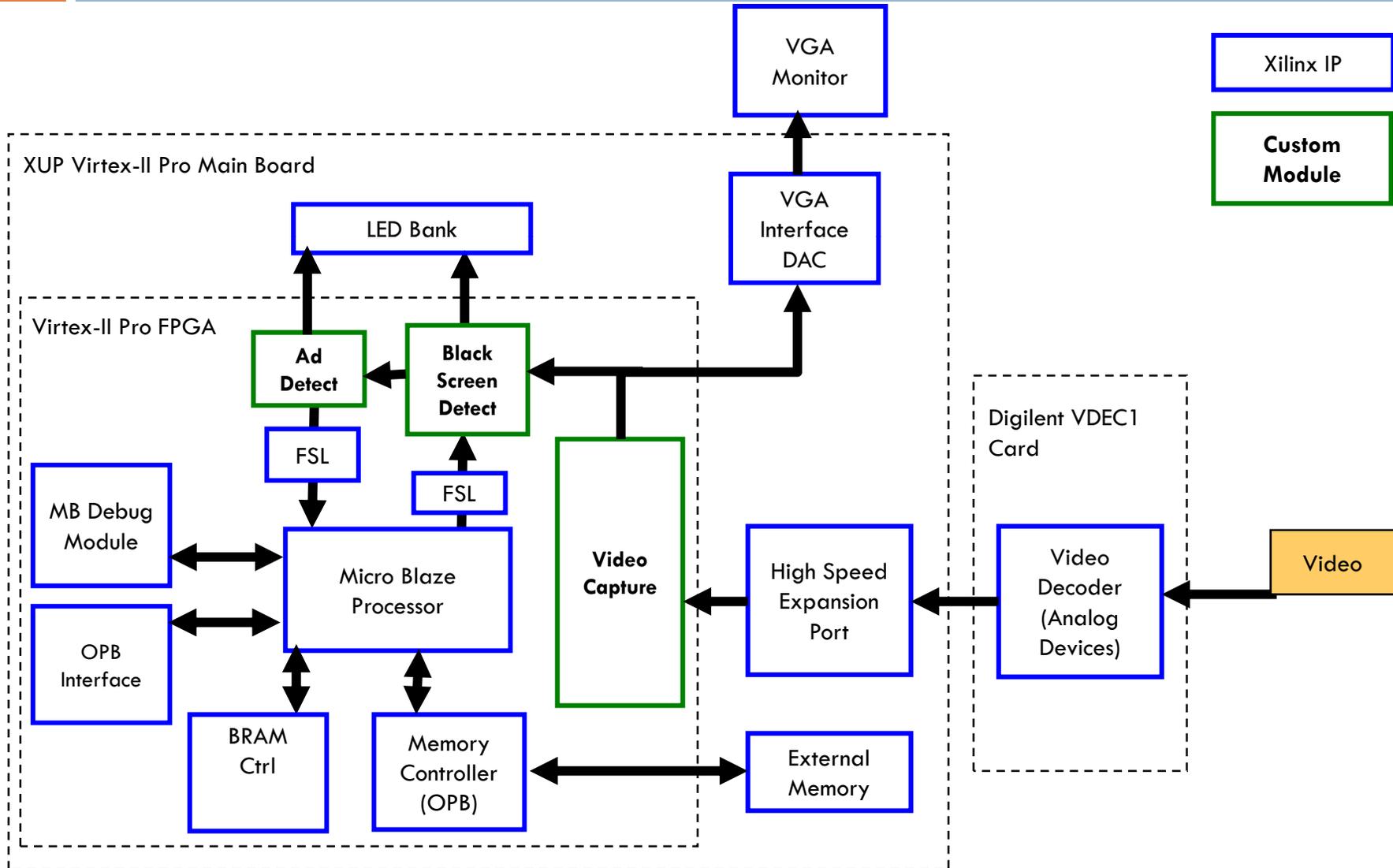
- Ported Xilinx “video_capture_rev_1_1” project from PPC to Microblaze
- Successful FSL implementation
- Successful connection to external memory
- Successful colour to greyscale conversion

Design

- Real-time video processing
 - Saturating adder



System Design – Implemented



Functionality



- Black Screen Detection
- 15, 30, 45, 60 sec Ad Flagging
- Signals output in sync with output video
 - ▣ Proof of concept
 - ▣ Marketable in PVRs
- Independent system design

Conclusion



- Project was a success despite a major obstacle
- Learned about practical integration of hardware and software design