



An object detection framework for **NVIDIA** GPUs

## What's WBD about?

Object detection is a process of finding real-world objects such as faces, vehicles or pedestrians in images and videos. The goal of WBD is to detect such objects, exploiting the capabilities of NVIDIA GPUs to their maximum and use them for other applications such as tracking, recognition or analysis.

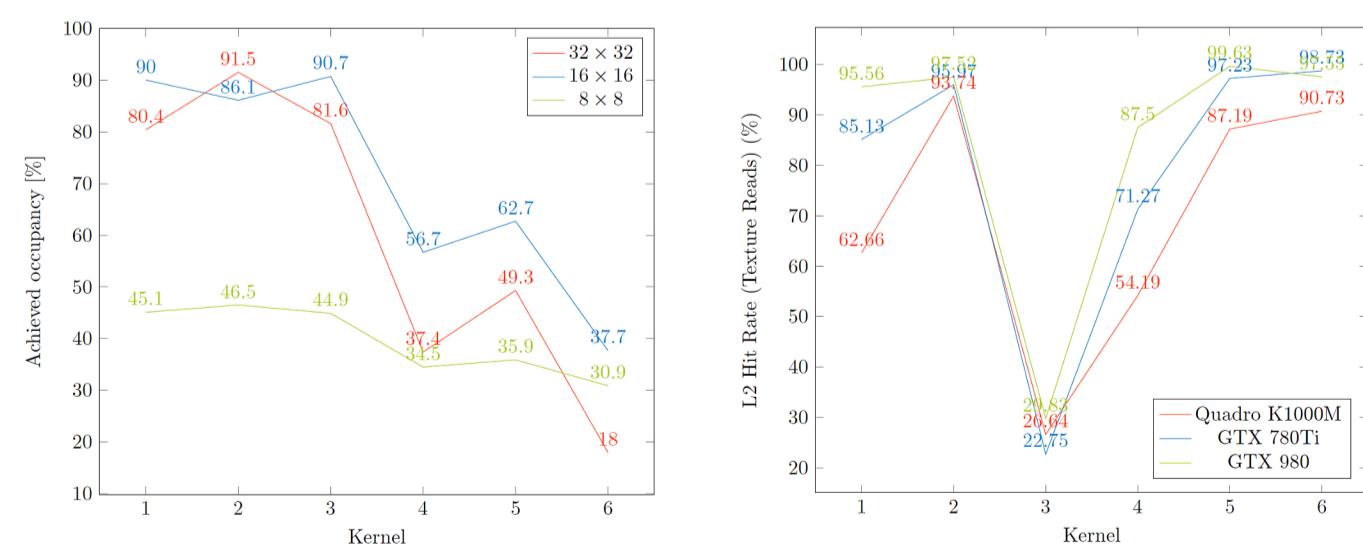
## Overview

- WaldBoost object detection with LBP features
- Powered by NVIDIA CUDA and OpenCV
- Processes both videos and large image datasets
- Device specific performance optimizations
- Works on all devices (even non-NVIDIA GPUs)

## Technical details

### Device specific implementations

The framework contains several implementations of a waldboost detector using LBPs, specific for both high-end GPUs and low-end GPUs, each exploiting a specific feature of the CUDA toolkit. In total there are 5 implementations: shared memory-only, global memory-only, hybrid, prefix-sum and a simple CPU implementation to run on devices without Kepler/Maxwell architecture or CUDA.

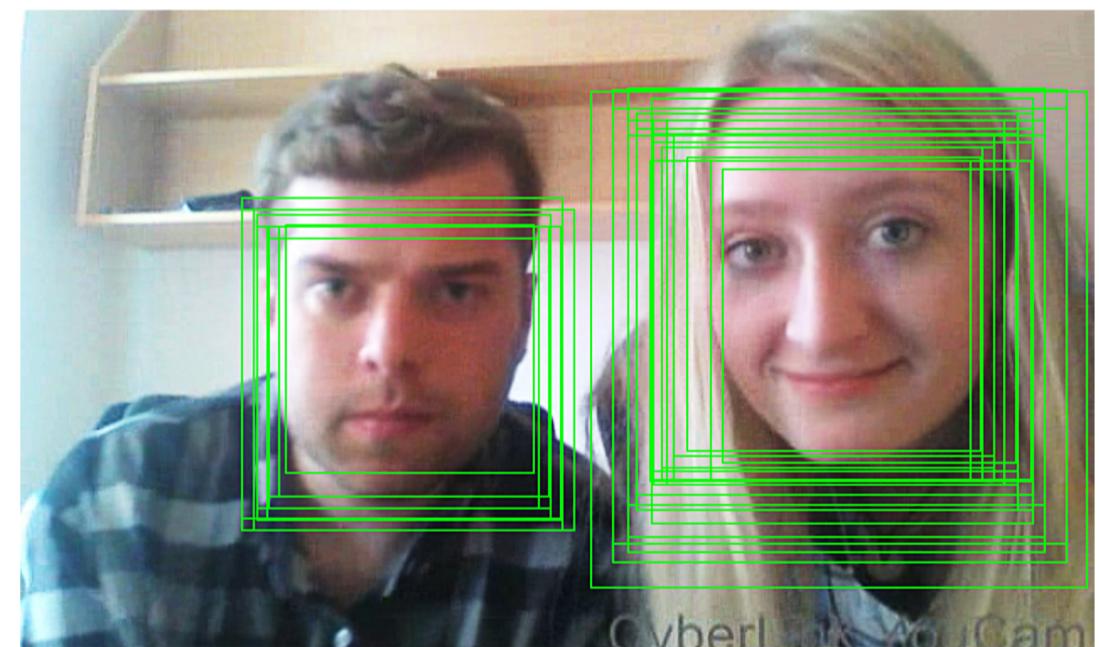


### Detailed measurements and profiling

Detailed measurements for detection time and surviving sample count were done, and based on the results, specific metrics were profiled such as achieved occupancy, L2 cache utilization, memory throughput, or atomic operation throughput.



Movie "The Game", 1997 by David Fincher



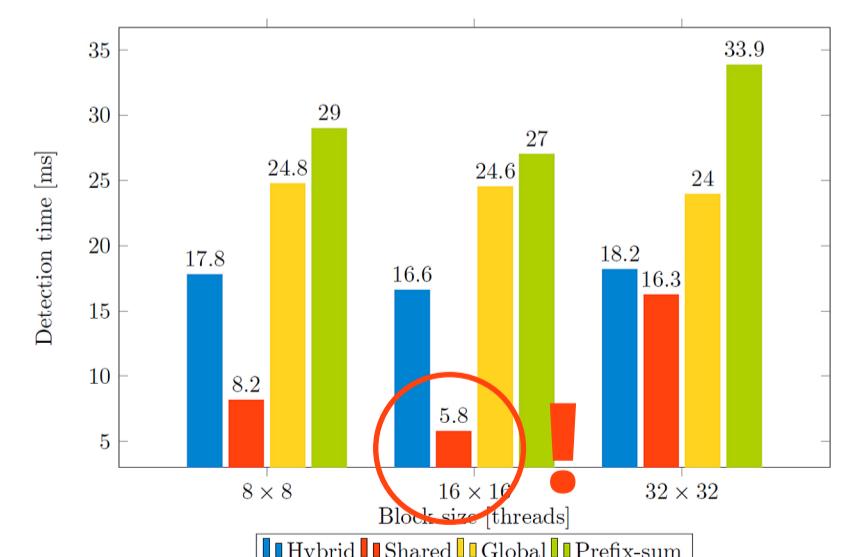
Screencast from a webcam

## Results

### Detection time

**Time: 5.8ms**

1920x1080 (FULL HD)  
NVIDIA GeForce GTX 980



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