

Javascript-GPU

By

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Motivation & Background

- Till recently Javascript executed sequentially
- Not leveraging from parallel client hardware
- Resulting in not so good user experience



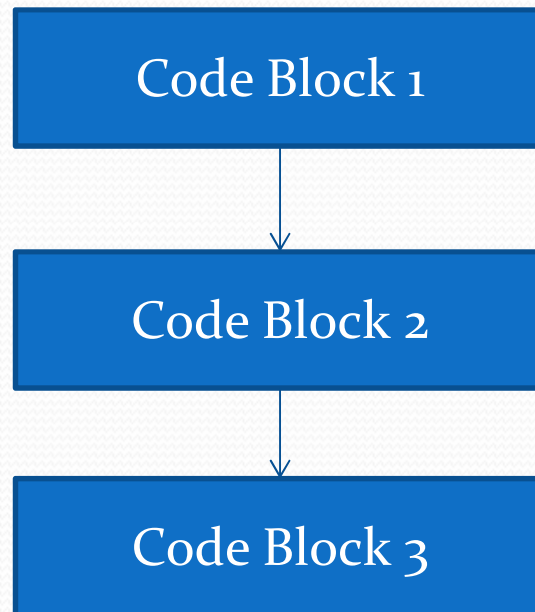
Recent works

- Intel's Rivertrail project
- Modern browsers like Chrome & IE9

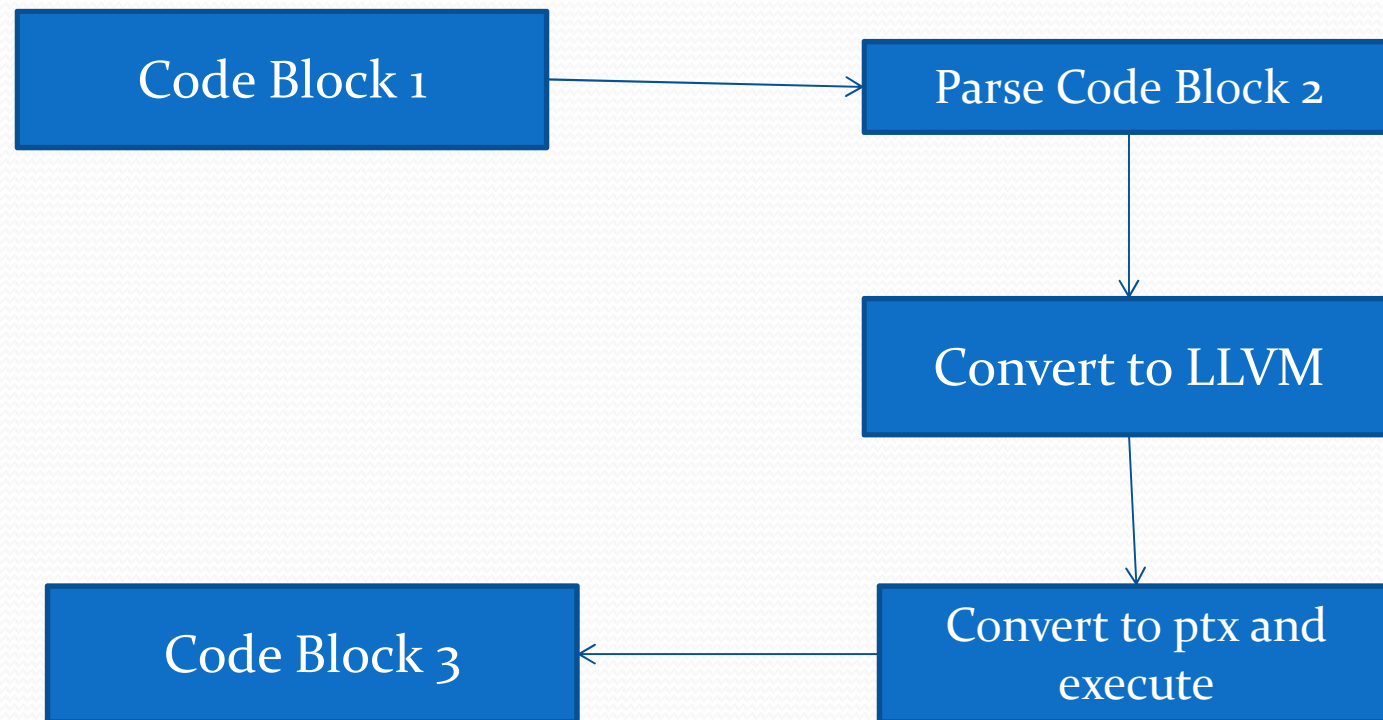
Our approach

- To keep it old & simple
- Applicable to any computation intensive algorithm
- Power in the hands of Javascript programmer

Flow – Sequential - JavaScript



Flow – Hybrid – JavaScript+GPU



Example

```
Components.utils.import("resource://gre/modules/ctypes.jsm");
var problemsize = 512 * 100
var bufferA = new ArrayBuffer(problemsize);
var bufferB = new ArrayBuffer(problemsize);
var bufferC = new ArrayBuffer(problemsize);
var N = problemsize

var float32ViewA = new Float32Array(bufferA);
var float32ViewB = new Float32Array(bufferB);
var float32ViewC = new Float32Array(bufferC);

/* Open the library */
try {
    var klib = ctypes.open("/home/malviyas/JS-GPU/libklib.so");
} catch (e) {
    alert("Error : Unable to load klib");
}

var execute_kernel = klib.declare("execute_kernel",
    ctypes.default_abi,
    ctypes.void_t,
    ctypes.voidptr_t,
    ctypes.voidptr_t,
    ctypes.voidptr_t,
    ctypes.int32_t
);

var ret = execute_kernel(float32ViewA.buffer, float32ViewB.buffer, float32ViewC.buffer, problemsize);
```


Benchmarking in progress

- N-body
- Ray tracing

The image features a solid blue background with a gradient that is darker at the bottom and lighter at the top. The top edge is decorated with several overlapping, wavy lines in various shades of blue and cyan, creating a sense of movement and depth. Centered on the right side of the image is the text "Thank You" in a clean, sans-serif font. The text is rendered in a light cyan color, which contrasts well with the darker blue background behind it.

Thank You