

2

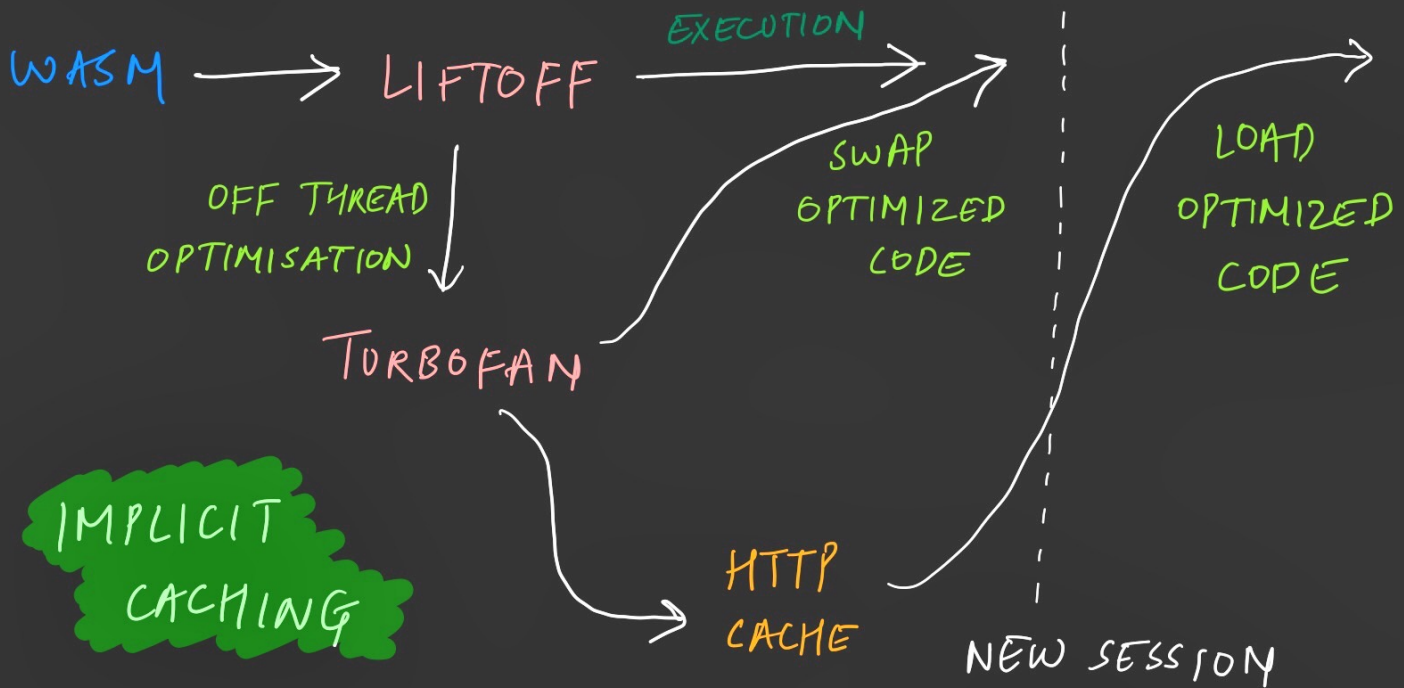
MODERN WEBASSEMBLY

CHROME
DEV SUMMIT
2019

* Not a replacement for Java

* Portability → Use open source libraries in web applications.

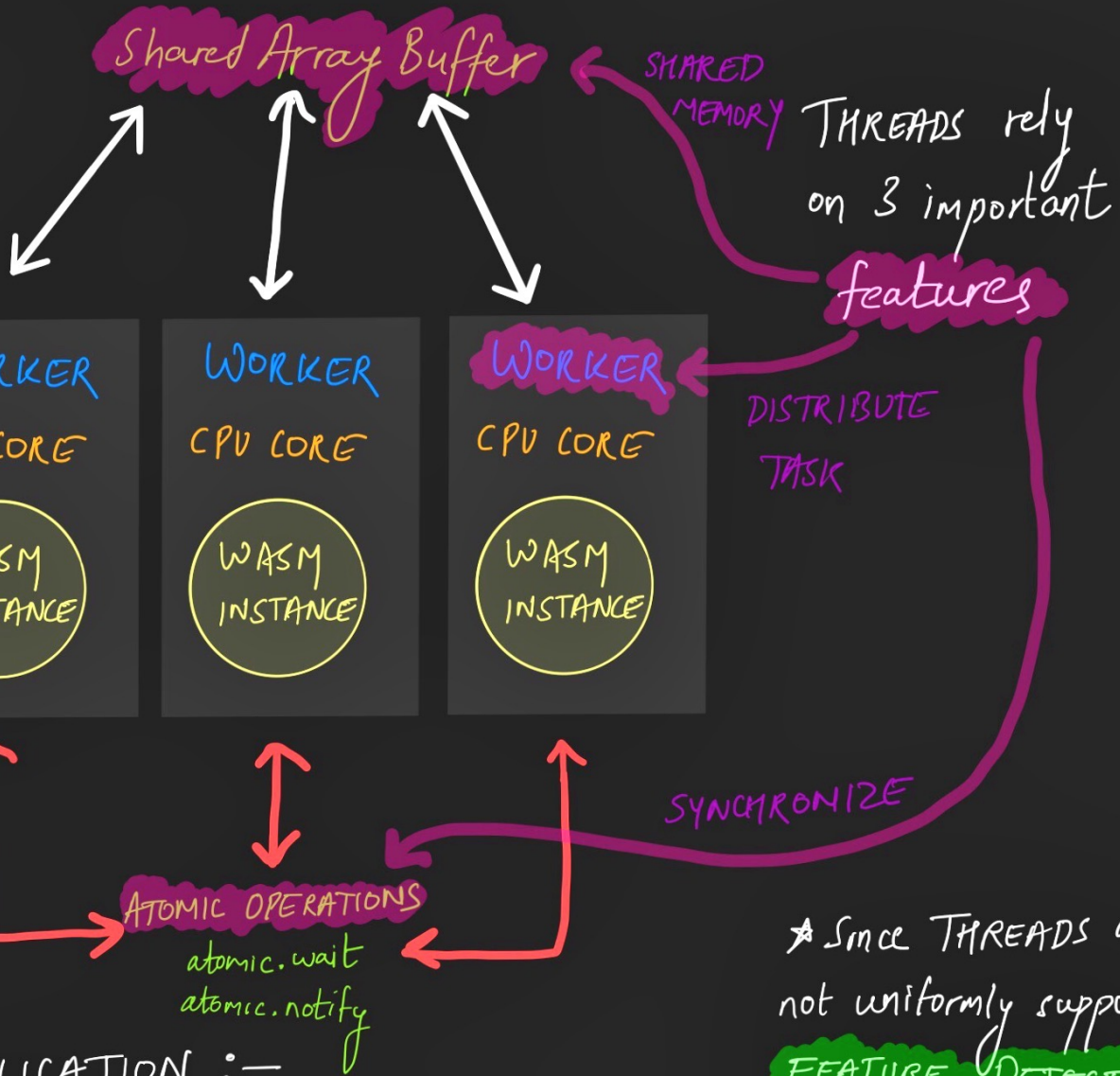
⇒ Shipped in all MAJOR BROWSERS.



TIP1 # USE STREAMING APIs → compile Streaming
→ instantiate Streaming

TIP2 # BE CACHE FRIENDLY → Keep URLs stable

WEB ASSEMBLY THREADS :-



APPLICATION :-

- ① GOOGLE EARTH
2x Frame Rate
- ② VLC
 $\frac{1}{2} \times$ Dropped Frames

★ Since THREADS are not uniformly supported **FEATURE DETECTION** is recommended.

`wasm-feature-detect`

`pthread` < `std::thread` < `std::async`
`pthread` is used by these higher level APIs. The goals of higher level APIs will be lowered to same `pthread` goals and handled by **EMSCRIPTEN**

SIMD: SINGLE INSTRUCTION MULTIPLE DATA

WASM vs. WASM SIMD

DEVICE: Galaxy S10

→ 3x
Speedup.

	MVP	SIMD	SIMD+THREADS
OpenCV applications →	4 FPS	15 FPS	33 FPS

	THREADS	SIMD	SIMD+THREADS
OpenCV Kernel Performance →	3.5x	9x	30x

AUTO-VECTORIZATION → **Compiler Feature**

↳ Detects loops that perform same mathematical operations on array items independently

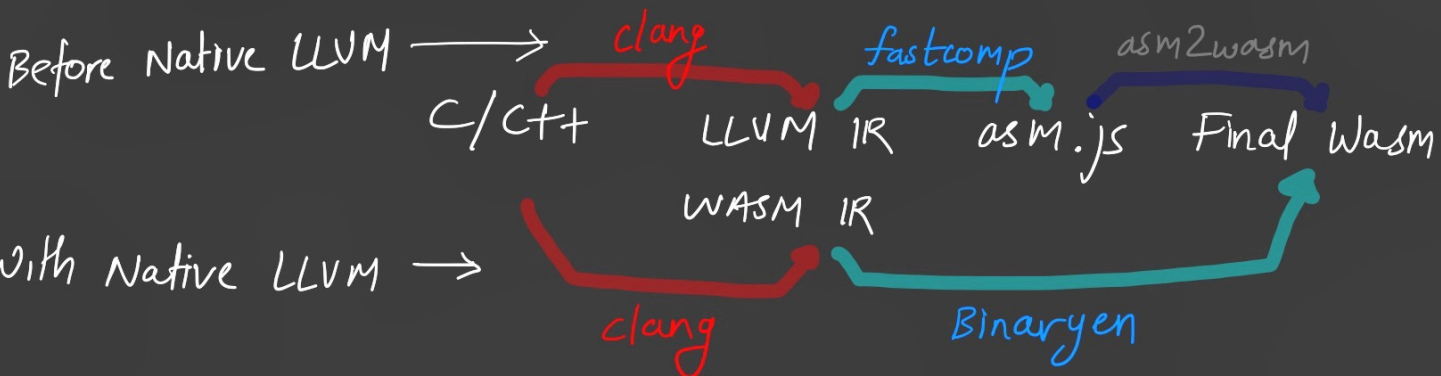
SIMD

↓
Experimental and available only in Chrome

Must be used with

FEATURE DETECTION

EMSCRIPTEN PIPELINE



USING ASYNCHRONOUS APIs

