GPU性能分析

聚焦于GPU计算

如何评测

GPU调试分析

CPU/GPU 追踪

应用程序追踪





Nsight System

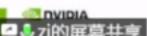
系统级调试器

- 核心特点:
 - 系统级应用算法调试
 - 支持多进程树
 - 找到优化机会
 - · 以GUI时间线的方式可视化数百万个事件(event)
 - 未使用的CPU和GPU事件间隔显示
 - 在多CPU和GPU之间平衡工作负载
 - · CPU算法, 利用率, 线程状态
 - GPU stream, kernel, 内显存传输等
 - 命令行、独立方式或IDE集成

OS: Linux (x86, Power, Arm SBSA, Tegra), Windows, MacOSX(host)

GPUs: Pascal架构及以上

文档/产品页: https://developer.nvidia.com/nsight-systems





Pix Timeline View A 6 warnings, 201 message: +180ms +125ms CPU utilization # CPU 94 ■ CPU 95 Processes (49) threads w Threads (15) ■ 3 [54354] python = pthread cond wait OS runtime libraries spoch1 step2025 rain8 640 8 640 8 640 8]45.914 ms NVTX CUDA API cuBLAS bertal & Labelle Bastesfatterates Profiler overhead ▼ [56191] py0 CUDA & pthread cond wait othread cond wait uBLAS AP CUDA API and a facility of the contract cuBLAS ▼ [56496] python GPU CUDA CUDA (Tesla V100-5XM3-3 emels & memory All Streams - 71.0% Default stream + 99.3% Kernels ▶ 0.7% Memory MVTX NVTX projected or GPU CUDA stream ▼ ○ [54268] py Bottom-Up View * Process [54354] python (6.1%, 15 of 15 threads) Search. Apubli Name Eval EvalFrameDefault * Module Name 5.85 /opt/conda/bin/python3.6 3.51 /opt/conda/bin/python3.6 Test function 3.51 /opt/conda/bin/python3.6 + call function 1.17 /opt/conda/bin/python3.6 gen send ex PyEval EvalCodeWithName 0.58 /opt/conda/bin/python3.6 0.58 [Max depth] [Max depth] pthread mutex unlock 3.51 Alb/x86_64-linux-gnufibpthread-2.27.so

Nsight Systems 界面展示

支持追踪的事件、输出格式、平台架构

Trace:

- TensorRT
- Direct3D11,12,DXR
- Vulkan
- OpenGL
- OpenACC
- MPI
- OpenMP
- Ftrace
- . ETW
- WDDM
- GPU Context Switch

输出:

- SQLite
- . HDF5
- JSON

架构:

- X86_64
- Power
- . Arm SBSA
- Tegra

