Package: tulpaGPU (via r-universe)

November 21, 2026

Title CUDA Backend for the 'tulpa' Bayesian Engine

Version 0.1.0

Description Runs the device operations of the 'tulpa' engine on an NVIDIA graphics processing unit: dense and sparse Cholesky factorizations, factorizations batched across the cells of a nested Laplace grid, basis products, observation scatter and fused likelihood kernels. The CUDA driver and the 'cuSOLVER', 'cuBLAS', 'NVRTC' and 'cuDSS' libraries are loaded at run time, so installing the package needs only a C++ compiler. Once loaded, 'tulpa' sends each operation to the device when it lies above its measured size crossover, or always under control$device = ``cuda''.

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Encoding UTF-8

Roxygen list(markdown = TRUE)

SystemRequirements C++17; at run time an NVIDIA driver and the CUDA 12 or 13 runtime libraries

Depends R (>= 4.1.0)

Imports Rcpp (>= 1.0.12), tulpa (>= 0.8.0), tools, utils, stats

Suggests testthat (>= 3.0.0), Matrix, withr

Remotes gcol33/tulpa

LinkingTo Rcpp, tulpa

Config/testthat/edition 3

URL https://github.com/gcol33/tulpagpu

BugReports https://github.com/gcol33/tulpagpu/issues

Config/roxygen2/version 8.1.0

Config/pak/sysreqs cmake nvidia-cuda-dev

Repository https://gcol33.r-universe.dev

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`gpu_info` *CUDA device availability*

Description

Report the CUDA driver, the selected NVIDIA device, and the runtime libraries tulpa's device routes use. Installation requires a C++ compiler only; the libraries are loaded when a device operation is first requested.

Usage

```
gpu_info()

## S3 method for class 'tulpa_gpu_info'
print(x, ...)
```

Arguments

`x`	A `gpu_info()` result.
`...`	Ignored.

Value

An object of class `tulpa_gpu_info` with availability, the reason for unavailability, device properties, and library paths and reasons.

Examples

```
gpu_info()
```

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print.tulpa_gpu_info *(*gpu_info*)*, 2