edgyR-containers: Docker Images for NVIDIA® Jetson™ R Developers

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https://github.com/edgyR/edgyR-containers.git

https://hub.docker.com/r/edgyr/edgyr

1. JetPack limitations for R developers

- R version is 3.4.4
- *Pandoc* version is 1.19.2.4
- No newer upstream Ubuntu 18.04 LTS *arm64* binaries available
- ***No RStudio® ☹!***
- And we'd really like
  - ***CUDA support in R!***
  - *Conda* support
  - a "pet container" Docker image
- So, we must build from source

2. Implementation requirements

- Must use latest stable R and RStudio
- Must run on 4 GB Jetson Nano, AGX Xavier and Xavier NX
  - Not supported: 2 GB Jetson Nano, TX1 and TX2
- Must comply with GNU Affero General Public License to distribute RStudio

3. Current status

- Version 0.7.5 released
  - Docker image on Docker Hub ("FROM" NVIDIA *NGC L4T base*)
  - R 4.0.3
  - *Pandoc* 2.11.2 – RStudio required version
  - ***RStudio Server 1.4.1103 - has enhanced Python support***
- Administrative user *edgyr* with passwordless *sudo* privileges
  - R developer tools: R Markdown, *tidyverse*, *devtools*, Shiny®
  - ***CUDA support leverages JetPack Python bindings via R package!***
- *conda* support via conda-forge *Miniforge* package
  - https://github.com/conda-forge/miniforge
  - Conda environment *r-reticulate* with *JupyterLab*, *CuPy* and *cuSignal*
- Installers for additional software
  - Jetson *PyTorch*, *TensorFlow* 1 and 2 + R access libraries
  - Portable Computing Language (*PoCL*) – CPU OpenCL & CUDA back end + R access library
  - Julia with *CUDA.jl*
  - Apache Arrow C++ / Python / R with CUDA support
  - R libraries for audio processing, Bayesian statistics, and geospatial computing

4. Road map

- ***Enhancement paused – no readily available CI/CD service for Ubuntu arm64 ☹***