# GPU-based speedup of EACirc project

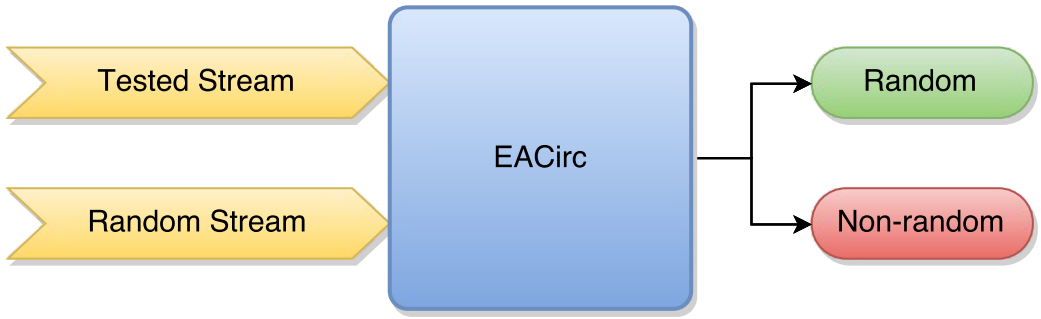
Author: Jiří Novotný
Supervisor: RNDr. Petr Švenda, Ph.D.

Faculty of Informatics
Masaryk University

Spring 2015

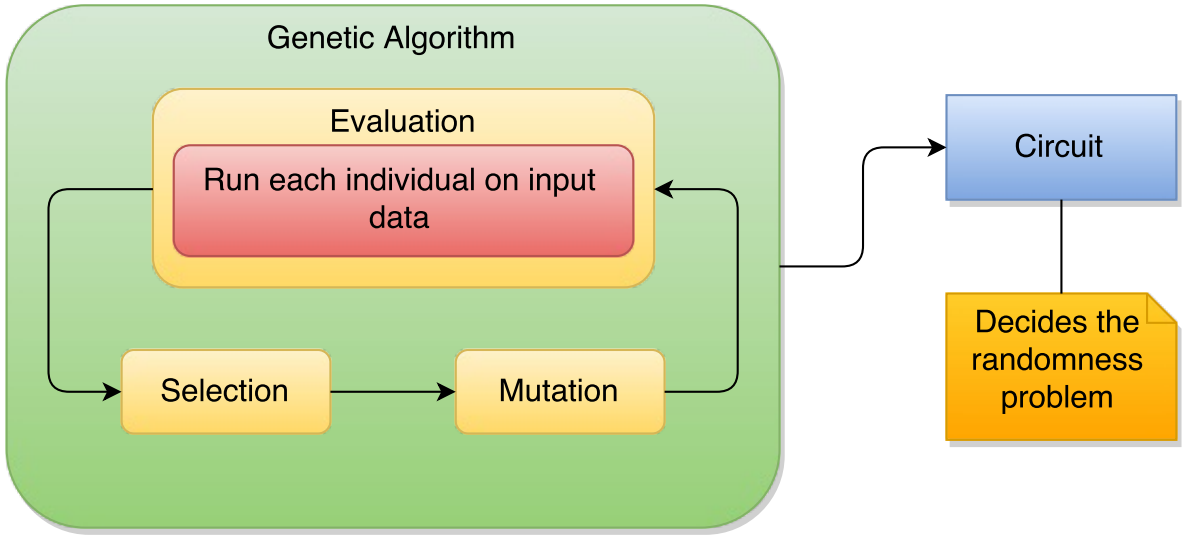
# Outline

# What is EACirc?




Distinguishes input streams from one another.

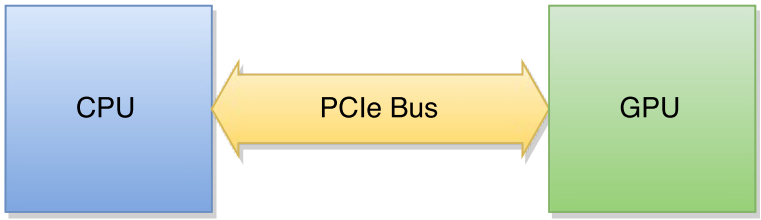
# How EACirc works?



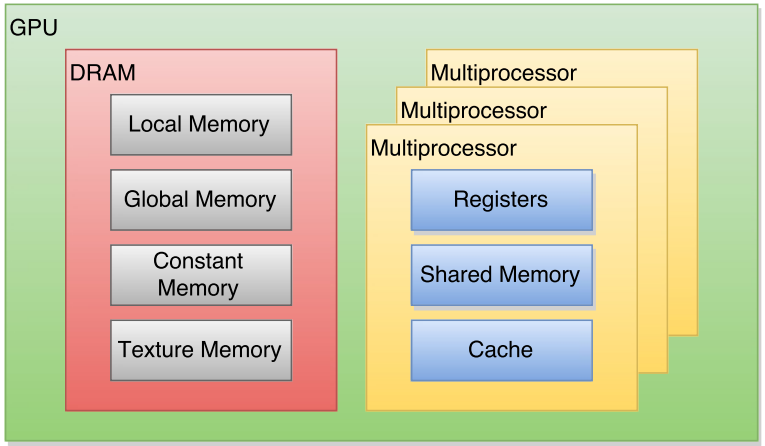

Speeding-up the evaluation could move the EACirc capabilities further.

# CUDA

CUDA is a platform enabling general purpose computing on GPU.



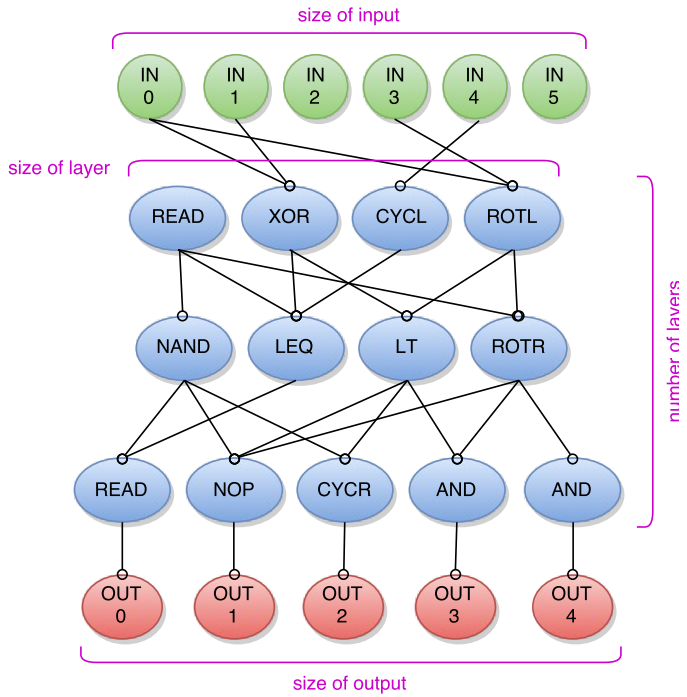

Different device & architecture



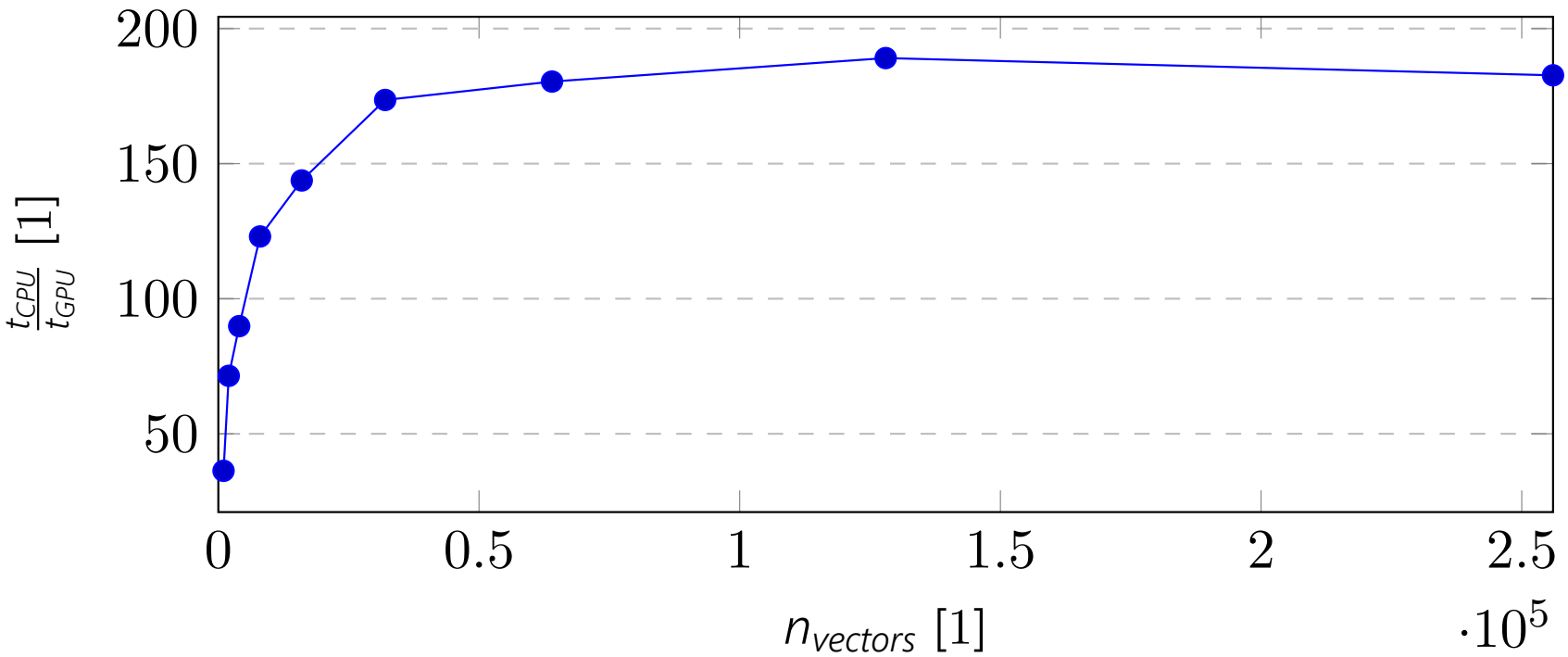

Complex memory design

# GPU circuit

- natural data parallelism
- different implementation than the original circuit due to the CUDA memory restrictions



# Benchmarks



# The new build-system

- CUDA needs different building process
- previously for each platform a separate makefile
- hard to maintain

- solved by CMake integration
- separation of EACirc modules into static libraries

# Summary

The GPU circuit

- designed to utilize the GPU
- implemented
- integration tested
- benchmarked on GeForce GTX 460
- 160x speed-up
- expected to be integrated into production

The new build-system

- easy to maintain
- conditional building of modules & features
- refactored filesystem structure
- integrated into production