ETTH Eidgenössische Technische Hochschule Zürich Swiss Federal Institute of Technology Zurich



Prof. R. Wattenhofer

Evaluating libraries computing special functions on a GPU

Special functions refer to a loosely defined group of functions which are of particular importance in mathematical analysis, functional analysis, geometry and physics. Common examples are the exponential and logarithmic functions.

Libraries such as SciPy, PyTorch and CuPy implement some of these special functions on the CPU and GPU. However, many of the less commonly used special functions are not implemented on the GPU. When implementing a new special function on the GPU this project aims to address the question of how their performance should be evaluated.



Specifically, we wish to answer the following questions focusing particularly on Bessel functions,

- What are use cases for a particular special function and how does the evaluation method account for these.
- What range of input can we expect.
- What numerical accuracy do we need.

Requirements:

Prior experience and a strong interest in low level programming in C/C++ is recommended. Programming skills in CUDA and good mathematical skills are advantageous.

Interested? Please contact us for more details!

Contact

• Andreas Plesner: aplesner@ethz.ch, ETZ G95