1. Preliminaries

1.1. **Maximum-Minimum Filter.** The Maximum-Minimum Filter computes the maxima and the minima over running windows of size $w > 2$. See the following website to see the sequential implementation: https://github.com/lemire/runningmaxmin. The paper is instead available at http://arxiv.org/abs/cs.DS/0610046.

2. Project

Develop three efficient CUDA-based algorithms implementing the Streaming Maximum-Minimum Filter for big sample sizes (with $N_r \geq 10^7$ elements) using synchronous CUDA programming, using the Thrust library and using CUDA Streaming (not needed for groups with only one person, bonus for groups with two people -extra points-, required for groups with three people). Compare these versions with CPU-based version available at https://github.com/lemire/runningmaxmin with all the different versions using different sample sizes. Write a thoughtful report about the work you have done, with the explanation and the documentation of what you have done.

3. Presentation

On May 7th the people will provide a presentation of how they are going to structure the project. Each group should create a github account sharing it with me (my account is eziobartocci80) in order for me to monitor the progress of your project. The project should be finished (together with your protocol and documentation) on June 21st. Each group will discuss his project on June 26th.