

Design of a Compact Hough Transform for a new L1 Trigger Primitives Generator for the upgrade of the CMS Drift Tubes muon detector at the HL-LHC

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there is plenty of real-time pattern recognition algorithms
there is plenty of Hough Transform-based ones

why a new one?

our target applications include triggers and data filters

you need to be **extremely fast, efficient, precise, robust**

you work on **rather poor input data** (small amount, relevant noise/background)

you must **make the most of your computing resources** (i.e. FPGA)

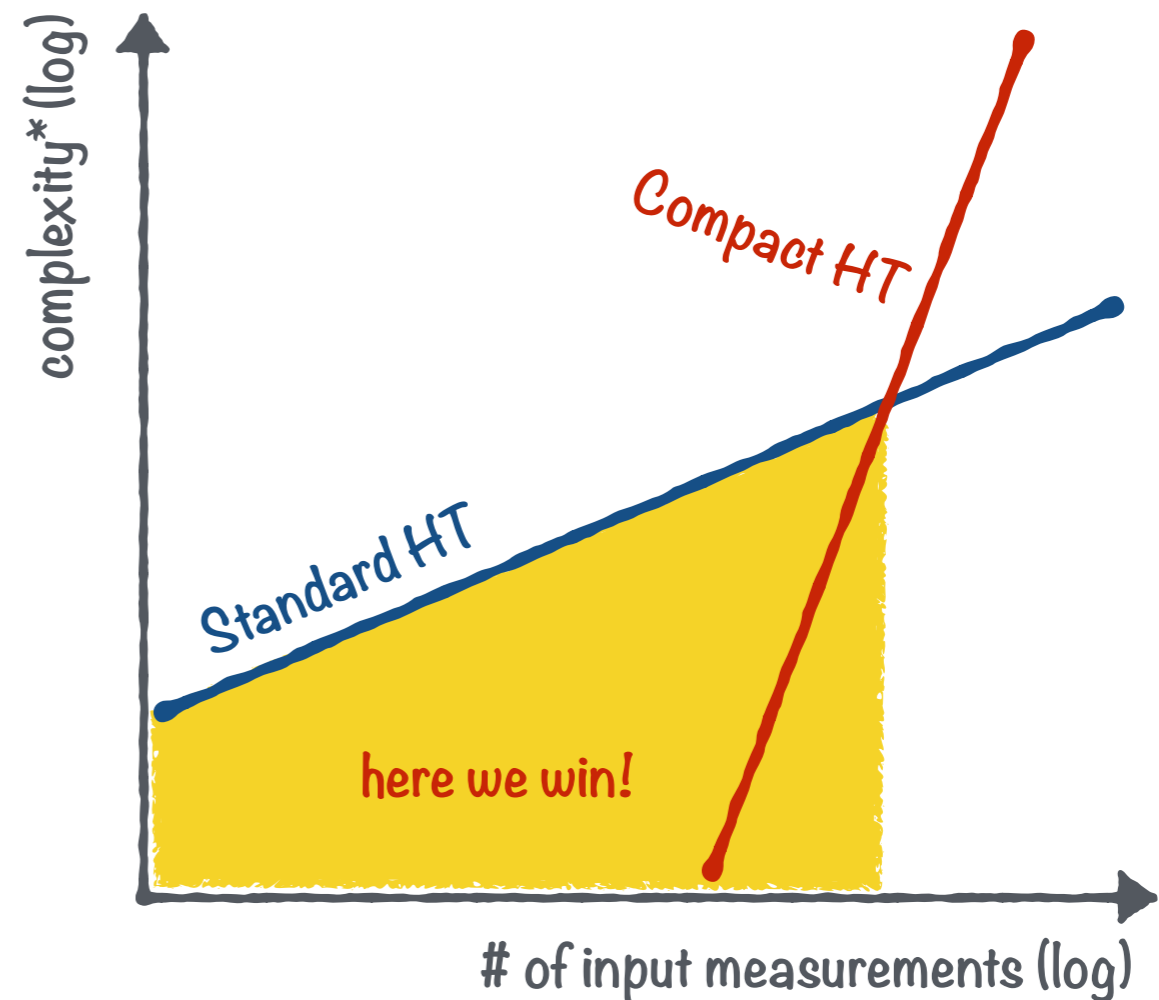
*the DT trigger of the CMS experiment at the HL-LHC is a fitting study case,
although we are extending our scope beyond it*

our design (patent pending) is based on the strategies used for input data handling before and after processing



example #1: input data redirection for parallel processing of small subsets, results combined together

example #2: can the transfer of HT load from parameter space to input data combinatorics be a 'win' for our target applications?



* complexity: HT histogram size, algebra, # of computations, # of comparisons, # of loops ...

questions and feedback will be welcome!

you can find me at wall # E-07