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## — Master Thesis — (Diplomarbeit)

# Side Channel Analysis Acceleration with CUDA and OpenCL

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### CASED

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### Motivation

The task of the thesis is to accelerate a *Differential Power Analysis* attack by using a GPU based architecture. Therefore the needed algorithms have to be implemented either with the CUDA and the OpenCL framework in C to utilize a Nvidia graphic card for massive parallel computing. The implemented program to speed up the computation should be embedded into a Matlab Toolbox. To improve the performance, different parallelization techniques have to be evaluated to gain the maximum throughput. For benchmarking the implemented algorithms in C via OpenCL and CUDA the original matlab DPA algorithms have to be transferred to GPUmat.

### Tasks

- Analyze existing algorithms in Matlab and implement them with CUDA
- Embedding the correlation calculation on the graphic card in the Matlab
- Optimize algorithms for correlation calculation on the graphic card
- Benchmark results against an existing Toolbox

### Requirements

- Knowledge in the area of parallel computing
- Experience with Matlab
- Expertise in programming C

### Date of entry

As of now

### Contact

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