TER Project - StarPU schedulers

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What to do

- Implement performance models for kernels
- Test out different schedulers and their effect on load balancing and performance

Basic schedulers

- eager - all workers take tasks from a centralised queue
- ws and lws - each worker has a queue, and when a worker is idle it steals jobs from other worker's queues
- prio and heteroprio - these schedulers take into account task priorities in scheduling (important to activate if you wish to test using priorities)

Performance modelling schedulers

- dm - use a performance model to estimate task execution times
- dmda - take into account transfer time
- dmdap - sort incoming tasks by priority
- dmdar - priority for tasks that have buffers available on worker
- dmdas - combines dmdap and dmdar

Performance models

- Field model of codelets
- `STARPU_HISTORY_BASED` - estimating execution time based on previous execution times for the same data size
- `STARPU_REGRESSION_BASED` and `STARPU_NL_REGRESSION_BASED` - execution time is estimated based on a regression model of past execution times for certain data sizes

Other scheduling

- Modular schedulers (some pre-implemented) and custom schedulers
- Balancing execution time and data transfer time with `STARPU_SCHED_ALPHA` and `STARPU_SCHED_BETA` environment variables
- Scheduling according to energy usage
- Scheduling tasks statically without input from a scheduler

Profiling

- `STARPU_PROFILING` environment variable to enable profiling
- `STARPU_WORKER_STATS` to enable worker statistics
- `STARPU_BUS_STATS` to enable bus and transfer statistics
- Possible to compile StarPU with FXT support to create traces (visualise them with ViTE)

Presentation and report information

- An exploration into the state of the art of runtime systems
- An overview of your work and interesting code bits
- Difficulties and challenges encountered
- Results of experiments (e.g. tile sizes, matrix sizes, transposition states, schedulers, . . .)
- Anything else you find to be interesting and relevant

Time slots

Alice PETIOT	M2 Binome1	13:30:00
Colin NAKACHE	M2 Binome1	13:30:00
Rostom BABAOUSMAIL	M2 Binome2	14:00:00
Paul-Marie MASSCHELIER	M2 Binome2	14:00:00
Brice POINTAL	M2 Binome4	14:30:00
Mohamed BADRI	M2 Binome4	14:30:00
Baptiste SOULLARD	M2 Binome5	15:00:00
Cyril DUBOS	M2 Binome5	15:00:00
Thomas COMBEAU	M2 Binome6	15:30:00
Tony BILLA	M2 Binome6	15:30:00

Next

Continue working on the TER project.

```
ssh qdcster_XX@chome.metz.supelec.fr
salloc --partition gpu_tp_resa --reservation M1QDCS_TERSTARPU15
       --exclusive --time 4:00:00
```