SimSo: A Simulation Tool to Evaluate Real-Time Multiprocessor Scheduling Algorithms
Maxime Chéramy\textsuperscript{1}, Pierre-Emmanuel Hladik\textsuperscript{1} and Anne-Marie Déplanche\textsuperscript{2}
\textsuperscript{1}CNRS, LAAS, Univ de Toulouse, INSA, Toulouse, France
\textsuperscript{2}Université de Nantes, IRCCyN UMR CNRS 6597, ECN, Nantes, France

SimSo is a simulator that is designed to facilitate the evaluation of scheduling algorithms.
Open Source: http://homepages.laas.fr/mcheramy/simso/

\textbf{25+ Available Schedulers}

\textbf{Uniprocessor:} RM, DM, FP, EDF, LLF, M-LLF, Static-EDF, CC-EDF
\textbf{Partitioned:} Any uniprocessor scheduler combined with various bin packing algorithms
\textbf{Global:} G-RM, G-EDF, G-FL, EDF-US, PriD, EDZL, LLF, M-LLF, U-EDF
\textbf{PFair:} PD\textsuperscript{2}, ER-PD\textsuperscript{2}
\textbf{DP-Fair and BFair:} LLREF, LRE-TL, DP-WRAP, BF, NVNLF
\textbf{Semi-Partitioned:} EDHS, EKG, RUN

\textbf{Easy to Use}

With a Graphical User Interface:

\dots or as a Python Module in order to automate multiple simulations.

\textbf{Conducting an Evaluation Campaign}

\textbf{Writing a Scheduler}
A scheduler for SimSo is a Python class that inherits from an abstract class.
This scheduler will be loaded dynamically by SimSo.

\textbf{Execution Time Models}
The computation time of the jobs are decided by a model during simulation.
Current models are: WCET, ACET, fixed preemption delays, cache related delays.

\textbf{Generation of a Taskset}
Various generators are available:

\textbf{Task utilizations:} RandFixedSum, UUniFast-Discard and other generators.

\textbf{Task periods:} Uniform, Log-Uniform, Discrete.
A taskset can also be generated using an external tool.

\textbf{Simulation}
SimSo can be used from a script to automate the simulations and extract data.
It can run thousands of simulations per hour.

\textbf{Analysis}
The output of a simulation is a trace of all the scheduling events.
Some functions ease the retrieval of common metrics (preemptions, migrations, response times, exceeded deadlines, etc).