# Optimized Slowdown in Real-Time Task Systems via Geometric Programming

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- gp_task_slowdown.pdf
- solve_task_gp.m, which needs gpposy.m, a compact version of the GPPOSY solver from the GGPLAB package

In “Optimized slowdown in real-time task systems”, Jejurikar and Gupta investigated energy savings due to optimal slowdown of periodic tasks in real-time task systems, where tasks have varying power characteristics and task deadlines are less than the periods. The authors presented a bisection method for computing near-optimal constant slowdown factors, when all the tasks are assigned the same slowdown factor. For the case when tasks have different slowdown factors, they presented a method for computing near-optimal slowdown factors as a solution to a convex optimization problem, using the ellipsoid method. In this note, we show a method to cast the problem of finding near-optimal slowdown factors that minimize the total energy consumption as a geometric program (GP), which can be efficiently solved using modern interior-point methods. More importantly, we show that the problem of finding near-optimal constant slowdown factors has an analytic solution. We demonstrate the GP approach by solving several numerical instances using a publicly available interior-point GP solver.