ABSTRACT

One of the problems with Linux today on laptops is that CPU will run in unoptimized manner which will negatively reflect on battery life. For example, CPU will run using "performance" governor with turbo boost enabled regardless if it's plugged in to power or not.

Issue can be mitigated by using tools like [indicator-cpufreq](https://itsfoss.com/cpufreq-ubuntu/)or [cpufreq](https://github.com/konkor/cpufreq), but these still require manual action from your side which can be daunting and cumbersome.

Using tools like [TLP](https://github.com/linrunner/TLP)can help in this situation with extending battery life (which is something I used to do for numerous years), but it also might come with its own set of problems, like losing turbo boost.

With that said, I needed a simple tool which would automatically make "cpufreq" related changes, save battery like TLP, but let Linux kernel do most of the heavy lifting. That's how auto-cpufreq was born.

Please note: auto-cpufreq aims to replace TLP in terms of functionality and after you install auto-cpufreq it's recommended to remove TLP . If both are used for same functionality, i.e: to set CPU frequencies it'll lead to unwanted results like overheating. Hence, only use [both tools in tandem](https://github.com/AdnanHodzic/auto-cpufreq/discussions/176)if you know what you're doing.

Tool/daemon that does not conflict with auto-cpufreq in any way and is even recommended to have running alongside is [thermald](https://wiki.debian.org/thermald).

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**INTRODUCTION**

**One of the problems with Linux today on laptops is that CPU will run in unoptimized manner which will negatively reflect on battery life. For example, CPU will run using "performance" governor with turbo boost enabled regardless if it's plugged in to power or not.**

**Issue can be mitigated by using tools like indicator-cpufreq or cpufreq , but these still require manual action from your side which can be daunting and cumbersome.**

**Using tools like TLP can help in this situation with extending battery life (which is something I used to do for numerous years), but it also might come with its own set of problems, like losing turbo boost.**

**With that said, I needed a simple tool which would automatically make "cpufreq" related changes, save battery like TLP, but let Linux kernel do most of the heavy lifting. That's how auto-cpufreq was born.**

**Please note: auto-cpufreq aims to replace TLP in terms of functionality and after you install auto-cpufreq it's recommended to remove TLP . If both are used for same functionality, i.e: to set CPU frequencies it'll lead to unwanted results like overheating. Hence, only use both tools in tandem if you know what you're doing.**

**Tool/daemon that does not conflict with auto-cpufreq in any way and is even recommended to have running alongside is thermald .**

**auto-cpufreq is a new automatic CPU speed and power optimization tool for Linux laptops using Intel CPUs (edit: it now also supports AMD and ARM CPUs), which aims to "improve battery life without making any compromises".**

**The tool changes the CPU frequency scaling, governor (switches between performance and powersave, these being the only 2 modes supported by the default intel\_pstate scaling driver) and turbo boost status based on the battery state, CPU usage and system load. It can also show some basic system information, monitor the CPU frequency and temperature for each core, system load, and battery state.**

**Its developer says that auto-cpufreq was born because you can't automatically set the CPU governor - you can set it to performance or powersave, but you can't switch between these automatically, depending on the battery status, CPU load or temperature.**

**It's worth noting that auto-cpufreq doesn't interfere with TLP, another tool to extend the battery life on laptops running Linux. So if you have it installed, you can continue using it without any issues. Recently the auto-cpufreq developer has changed this, and now TLP is no longer recommended to use with auto-tlp.**

**auto-cpufreq has 3 modes. Run it with the --monitor option to see what auto-cpufreq could change on your system without actually changing anything. Use --live to get this tool to make the necessary changes to your system but only temporarily, until you reboot, allowing you to evaluate how your system would behave with auto-cpufreq. And the third and final mode makes the changes persistent across reboots, by installing the auto-cpufreq daemon and systemd service - use --install for this.**

**Once you use the --install option, in case you want to see what's going on you can run auto-cpufreq with the --log option.**

**In case you later want to remove the auto-cpufreq daemon and systemd service, run auto-cpufreq with the --remove option.**