

ABSTRACT

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***ANALYSIS OF THE EFFECT OF OVERCLOCKING AND UNDERVOLTING
AMD CPU AND GPU ON COMPUTER PERFORMANCE BASED ON
TEMPERATURE AND BENCHMARK SCORE***

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In the rapidly evolving era of technology, computers have become essential. With increasingly advanced computers, humans can make technological breakthroughs that have the potential to change the course of human history. However, over time, even newly acquired computers can become obsolete. To minimize financial expenses, it is necessary to implement *strategies* that allow these computers to remain competitive or keep up with the latest technology. One such *strategy* is *overclocking*. On the other hand, *overheating* is a common issue with computers. Excessive heat can reduce a computer's lifespan. By using *Undervolting*, it is possible to lower the temperature and *power* consumption. This research aims to analyze the impact of *overclocking* and *Undervolting* techniques on AMD CPUs and GPUs' performance, measured through component temperatures and synthetic *benchmark scores*. *Overclocking* is a technique that increases the operating *speed* of computer components such as the CPU and GPU beyond factory specifications, while *Undervolting* reduces operating voltage to lower heat and *power* consumption. The experiment was conducted using an AMD Ryzen 5 5600 CPU and an AMD RX 6700 XT GPU with various *overclock* and *Undervolt* settings. Performance data were collected through 7 types of synthetic *benchmarks* which is, CinebenchR23, Geekbench 6, Blender Open Data, 3Dmark, Superposition *Benchmark*, Unigine Heaven *Benchmark* 4.0, and Furmark. The results showed that *overclocking* increased performance by approximately 8% but also raised temperatures by 12%, whereas *Undervolting* successfully reduced temperatures by 4.29% without drastically reducing performance. This research emphasizes the importance of thermal management in *overclocking* and *Undervolting* to maintain system stability and efficiency.

References (2017 - 2024)