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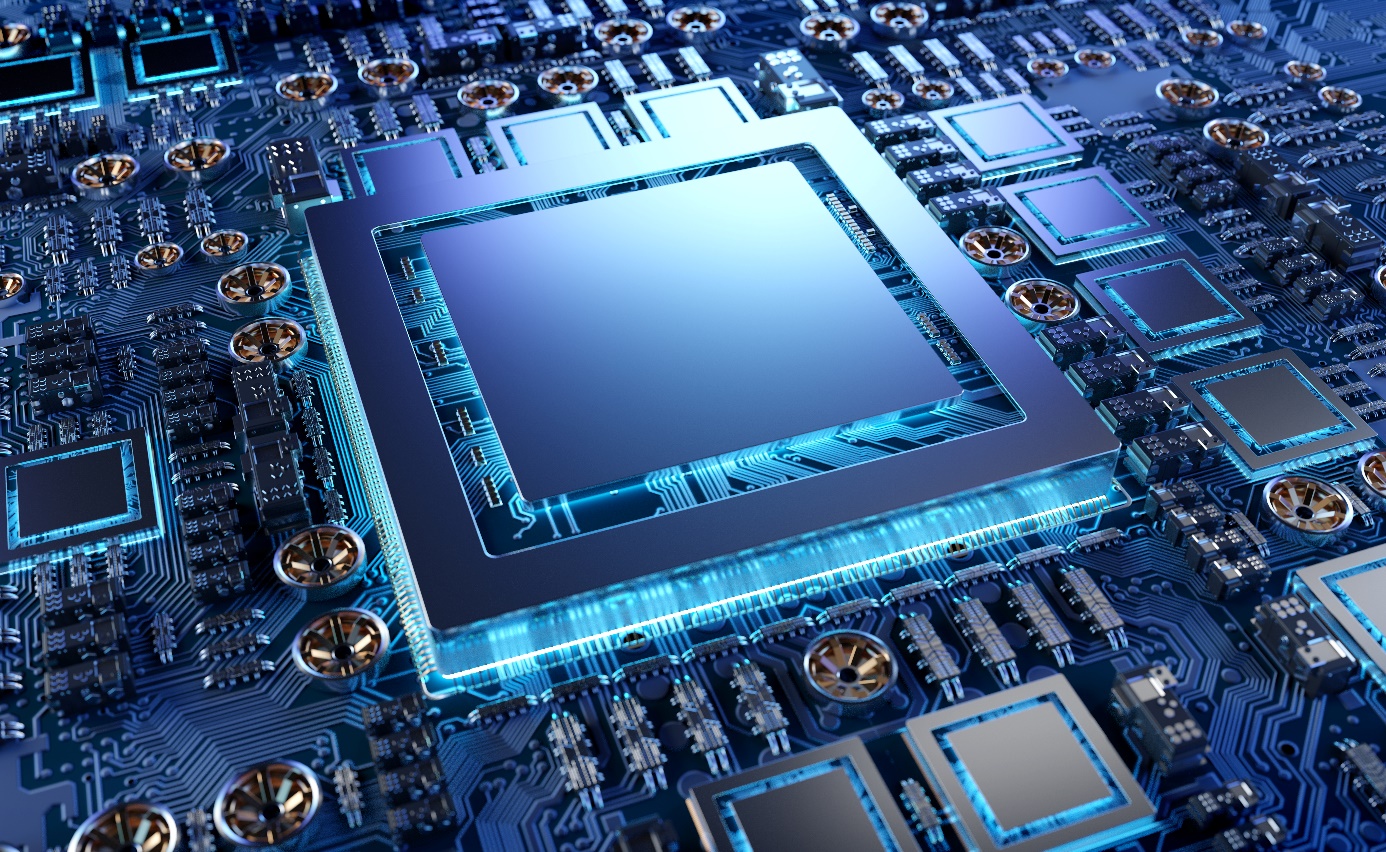
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Precision Meets Performance With GPU-Accelerated Simulation

**Up to 10 times faster than CPU-based material removal simulations**



[Aachen, Germany, 26 August 2024] ModuleWorks announces the upcoming availability of its GPU-accelerated simulation. This new feature uses the processing speed of the workstation’s GPU (graphics processing unit) to generate extremely fast and precise simulations of material removal. It is expected to be made available for testing with the ModuleWorks 2024.12 software release.

As machine tools, parts, toolpaths and manufacturing techniques become more complex, it is increasingly important to simulate machining processes as accurately as possible. While many CAM systems offer various methods to visualize and verify the machining process, they often involve a compromise between speed and quality of the verification.

ModuleWorks GPU-accelerated simulation is designed to eliminate this trade off, using the workstation’s GPU architecture to rapidly create high-quality simulations of complex machining scenarios. The new feature will be offered as part of the ModuleWorks Cutting Simulation software and can be integrated directly in existing CAM systems, enabling solution providers to upgrade to GPU-accelerated material removal simulation while retaining the full feature-set of the ModuleWorks simulation products.

“ModuleWorks continues to push its innovative development team to bring the most modern technologies to the market with a strong focus on user experience and productivity. Our partners will benefit directly from this new technology becoming broadly available and will be able to offer it to their customers much faster”, said Miguel Tobias Johann, Product Director, at ModuleWorks.

“Our CPU-based simulation is already being used by many of our partners during process planning, optimization, and final verification where waiting times can be a challenge. It is exciting to leverage the GPU to further improve productivity for our users by delivering faster simulation results”, said Dr.-Ing. Sven Odendahl, Principal Product Manager - Simulation Portfolio at ModuleWorks.

The new GPU-accelerated simulation is an integral part of the ModuleWorks advanced simulation engine that also uses a discrete dexel model to further optimize performance and accuracy.

In benchmark tests conducted at the ModuleWorks facilities in Aachen, Germany, the ModuleWorks Cutting Simulation with GPU processing was up to 10 times faster than CPU-based simulations. The most significant accelerations and biggest time savings were achieved with large simulations containing over a million toolpath points.\*

[Click here for a video preview of GPU-accelerated simulation, including a comparative demonstration between CPU and GPU based simulations.](https://youtu.be/FbBPJQ2ejZA)

GPU simulation can help address a number of performance-related challenges in the manufacturing industry:

* Simulation Performance:

Simulating material removal operations with millions of toolpath points requires considerable computing power and takes time. The need to iterate operations, check simulations and optimize the process adds further programming time. With engineers under pressure to meet strict deadlines, they are often forced to compromise on the resolution and, therefore, the quality of the simulation.

* Simulation Accuracy:

The simulation needs to provide a sufficient stock resolution or accuracy for CAM engineers to verify and optimize the toolpath. However, engineers often need to compromise on accuracy to get the simulation results on time.

* Stock Management:

Machining processes incorporate numerous operations, from roughing to rest roughing and finishing. Simulating material removal provides the intermediate stock, which helps with the planning of rest-machining operations. Calculating the stock, however, is time intensive.

* Complexity of Verification:

CAM engineers often require in-depth analyses to verify and optimize machining processes. They rely on CAM software solutions for checking tool collisions, excess material, and tracking metrics like tool engagement data. These insights enable them to make informed decisions for improved results, but they are often hindered by the time-consuming complexity of the calculations.

GPU-accelerated simulation is designed to tackle these productivity issues, enabling engineers to maintain the high quality standards of machined products.

The upcoming ModuleWorks 2024.12 release will extend and intensify the testing on diverse third-party CAD-CAM hardware and software platforms.

\* Performance depends on the hardware configuration as well as the size of the simulation. The larger the simulation, the greater the acceleration. The benchmark tests were conducted using an AMD Ryzen 7 3700X CPU and NVIDIA GeForce RTX 4070 GPU which offer comparable mid-range performance. For more information, please contact ModuleWorks.

A**bout ModuleWorks**

[ModuleWorks](https://www.moduleworks.com/) is at the forefront of digital manufacturing software, playing a key role in enabling the efficient production of increasingly complex parts in an environmentally sustainable way. As a strategic partner to leading CAD/CAM vendors, CNC control makers, machine tool builders and cutting tool manufacturers, ModuleWorks develops software that powers solutions throughout the manufacturing industry which contributes to 16% of global GDP worth $16 trillion per year.

Founded in 2003, ModuleWorks has grown to over 200 employees and already invested 1,700 person-years of software development in toolpath and simulation technologies that form the core of manufacturing processes. In the CAD/CAM area alone, ModuleWorks has a market share of 90%, enhancing the performance and quality of over 500,000 installed seats of CAD/CAM and CNC software worldwide. With a comprehensive portfolio of cutting-edge software components and the capacity to address emerging and niche technologies like AI, cloud, automation, additive, robotics and digital dentistry, ModuleWorks is committed to shaping the future of digital manufacturing with its partners, empowering the industry to Get There Faster.