

# GIMPS – Great Internet Mersenne Prime Search

## GIMPS GPU Computing Guide

v0.02 – 2011-05-29 by [Brain](#)

*What can I do with my GPU (for GIMPS)?*

This shall become a quick start guide. Currently, it's only a technical data sheet. More information can be found in the [GPU Computing Forum](#) and in the app-specific readmes.

### Nvidia – [CUDA](#)

- GIMPS Trial Factoring → [mfaktc](#)
- GIMPS Lucas Lehmer Test → [CUDALucas](#)      most-needed GIMPS work type!
- llrCUDA      (not GIMPS)
- genefer      (not GIMPS)

### ATI – OpenCL or Firestream

- Nothing (yet) ☹

### [mfaktc](#)

<b>Name</b>	<a href="#">mfaktc</a>
<b>Work type</b>	Trial Factoring
<b>Restrictions</b>	Exponents: $1,000,000 < \text{Exponent} < 2^{32}$ and prime, Factor size: $2^{64} \leq \text{Factor size} \leq 2^{95}$
<b>Author</b>	Oliver Weihe
<b>Latest Version</b>	0.17    2011-05-06
<b><a href="#">Compute Capability</a></b>	$\geq 1.1$
<b>Uses</b>	CPU and GPU
<b>Can be compiled with</b>	CUDA Toolkit 3.0, 3.1, 3.2
<b>Download links</b>	<a href="#">Source</a> <a href="#">Win32 Executable</a> (needs additional <a href="#">CUDA 3.2 32bit library</a> ) <a href="#">Win64 Executable</a> (needs additional <a href="#">CUDA 3.2 64bit library</a> cudart64_32_16.dll)
<b>Remarks</b>	Sieving done on CPU. mfaktc works best on large exponents as the sieving (CPU) part stays constant with larger numbers.
<b>GIMPS score estimate</b>	roughly 75 GHz days/day    on GTX 560 Ti & 1 CPU core

### [CUDALucas](#)

<b>Name</b>	<a href="#">CUDALucas</a>
<b>Work type</b>	Lucas Lehmer Test
<b>Restrictions</b>	Exponents: $2 \leq \text{Exponent} < 151,150,000$ Exponent $< 39,800,00 \rightarrow$ 2MB FFT size Exponent $< 79,600,00 \rightarrow$ 4MB FFT size Exponent $< 159,200,00 \rightarrow$ 8MB FFT size
<b>Latest Version</b>	Source:      1.2 Windows:    1.0b    2011-02-20
<b><a href="#">Compute Capability</a></b>	$\geq 1.3$
<b>Uses</b>	GPU
<b>Download links</b>	<a href="#">Source</a> Win32 Executable? (needs additional CUDA 3.1 32bit library) <a href="#">Win64 Executable</a> (needs additional CUDA 3.1 64bit library: cudart64_31_9.dll, cufft64_31_9.dll)
<b>GIMPS score estimate</b>	roughly 11 GHz days/day    on GTX 560 Ti