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A Study of GPU Memory Vulnerabilities

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Abstract—GPUs are a fundamental component of most high computing environments available nowadays, being a general solution to various purposes that range from scientific solutions designed as software applications to clusters that hold and process sensitive data. In this paper we focus on Buffer Overflow attacks and memory vulnerability analysis with the intention to prove that given special circumstances the stack and heap zones are susceptible to memory overflow due to a lack of protection mechanisms.

Index Terms—GPU, GPGPU, Buffer Overflow, CUDA, Stack Overflow, Heap overflow, Memory Leaks

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