

UNIVERSITY OF SOUTH FLORIDA

Defense of a Master's Thesis

*Enforcing Security Policies On GPU Computing Through The Use Of
Aspect-Oriented Programming Techniques*

by
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For the MSCP degree in Computer Science & Engineering

This thesis presents a new security policy enforcer designed for securing parallel computation on CUDA GPUs. We show how the very features that make a GPGPU desirable have already been utilized in existing exploits, fortifying the need for security protections on a GPGPU. An aspect weaver was designed for CUDA with the goal of utilizing aspect-oriented programming for security policy enforcement. Empirical testing verified the ability of our aspect weaver to enforce various policies. Furthermore, a performance analysis was performed to demonstrate that using this policy enforcer provides no significant performance impact over manual insertion of policy code. Finally, future research goals are presented through a plan of work. We hope that this thesis will provide for long term research goals to guide the field of GPU security.

June 20th 2016

3:30PM

ENB 313

THE PUBLIC IS INVITED

Examining Committee

Dr. Jay Ligatti, Ph.D., Major Professor

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