# UNIVERSITY OF SOUTH FLORIDA

## *Defense of a Master's Thesis*

*Preventing Variadic Function Attacks*
*Through Argument Width Counting*
*by*
*Brennan Ward*

*For the MSCP degree in Computer Engineering*

*Format String attacks, first noted in June 2000 [1], are a type of attack in which an adversary has control of the string argument (the format string) passed to a string format function (such as printf). Such control allows the attacker to read and write arbitrary program memory. To prevent these attacks, various methodologies have been proposed, each with their own costs and benefits. I present a novel solution to this problem through argument width counting, ensuring that such format functions cannot access stack memory beyond the space where arguments were placed. Additionally, I show how this approach can be expanded to all variadic functions, and demonstrate an implementation of this approach within a C compiler.*

*Friday, October 28th, 2022*
*01:00 P.M.*
*Online (Microsoft Teams)*

THE PUBLIC IS INVITED

*Examining Committee*

Jay Ligatti, Ph.D., Major Professor
Mehran Mozaffari Kermani, Ph.D.
Yao Liu, Ph.D.

*Robert Bishop, Ph.D.*
*Dean, College of Engineering*

*Ruth H. Bahr, Ph.D.*
*Dean, Office of Graduate Studies*

**Disability Accommodations:**
*If you require a reasonable accommodation to participate, please contact the Office of Diversity & Equal Opportunity at 813-974-4373 at least five (5) working days prior to the event.*