

## **Breakout Session I: Information Security**

### **Title: Information Assurance Research Projects at UNO**

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The Information Assurance team at UNO has several research projects we are concurrently working on. The principle areas of research are in Critical Infrastructure Protection, Software Assurance, Cloud Computing, and Reverse Engineering. In the Software Assurance, we have been studying software vulnerabilities and databases of the weaknesses in software to develop semantic templates, which engineers can refer to in order to rapidly, make development decisions when writing programs. These templates relate the weaknesses to the vulnerabilities and then to the ramifications, and have assisted in development of better code. In the Cloud Computing area, we have developed privacy preserving distributed storage functions that allow for computations to be spread out to different cloud service providers. Our Critical Infrastructure Protection lab is used to search for weaknesses in the equipment used for industrial control areas such as water treatment plants and power grids. We have discovered several exploitable flaws in the protocols used to remotely monitor and update this industrial control equipment. In the area of Reverse Engineering we are working on both sides of the topic: we are teaching the techniques needed to hunt for vulnerabilities in existing programs, while at the same time researching techniques in obfuscation which make this process more difficult.

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**Author: *Steve Nugen, UNO***

I am not planning to deliver a formal presentation. I am planning to engage in the "Information Security" breakout sessions on Thursday and Friday. My primary research and teaching areas are secure operating system administration, forensics, and the discovery of vulnerabilities.

As time and logistics permit, I would also like to absorb some of the wisdom related to pedagogy and distance learning tools in the "Education: Research and Pedagogy" breakout sessions as I am planning to make a section of "Secure System Administration Using Windows" on-line in Spring 2014 for UiA and UNO students. I am especially interested in meeting with any UiA faculty who teach similar courses.