Developing and Assessing Educational Games to Enhance Cyber Security Learning in Computer Science

Jinghua Zhang

Department of Computer Science
Winston-Salem State University
Winston-Salem, NC, USA
zhangji@wssu.edu

Jinsheng Xu

Department of Computer Science
North Carolina A&T State University
Greensboro, NC, USA
jxu@ncat.edu

Xiaohong Yuan

Department of Computer Science
North Carolina A&T State University
Greensboro, NC, USA
xhyuan@ncat.edu

Elva J. Jones

Department of Computer Science
Winston-Salem State University
Winston-Salem, NC, USA
jonese@wssu.edu

ABSTRACT

Cyber security is a critical field in Computer Science education today. We need to prepare students for the increasing security challenges they will face in the future. The workforce also needs to have additional cyber security skills to best protect the interests of the nation. Motivating and engaging more students in this field is an important step to meet the needs of future workforce. Games have been successfully used in many areas of education, including Computer Science, to engage students in learning. They provide educational, immersive experiences, which could help underrepresented students gain the confidence to pursue a career or further study in the cyber security field while also inspiring others. The poster will present the three-year project that aims to develop and assess three educational games with in-game assessments to effectively teach cyber security concepts (Access Control, LAN Vulnerabilities and Buffer Overflow). These games will be designed with different levels of difficulty to target students from freshmen to seniors and integrated into the existing computer science curriculum at Winston-Salem State University and North Carolina A&T State University to benefit a wide range of students. In addition, all these games will be portable, self-contained and available for download from the project website.

CCS CONCEPTS

Applied computing → Education → Computer-assisted instruction

KEYWORDS

Cyber Security Education, Game-Based Learning, Simulation

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