

Communications

Razvan BEURAN

Advances in Cybersecurity Education and Training Methodologies

Razvan Beuran, Ken-ichi Chinen, Shinobu Hasegawa

Japan Advanced Institute of Science and Technology (Ishikawa, Japan)

Cybersecurity education and training activities are critical given that cyberattacks are occurring on an ever-increasing scale. Only practical hands-on activities can ensure that trainees will acquire the actual skills necessary to promptly deal with security incidents in real-life situations. However, current education and training programs rely significantly on the manual setup and configuration of the learning and/or training environments used, which is tedious, inefficient and error-prone.

We are currently developing an integrated cybersecurity training framework, named CyTrONE, that we designed and implemented to address the above shortcomings by automating the training content generation and environment setup tasks. We will first discuss the architecture and implementation of the framework, then we will demonstrate the framework effectiveness by presenting its evaluation from functionality and performance perspectives. Our results show that CyTrONE is well-suited for actual cybersecurity training activities in terms of features, usability and execution performance.

Security awareness training, aimed at regular computer users, is also an important issue in our society, since the spread of portable devices, such as smartphones, has led to a significant increase in the number of IT users. We shall also introduce our activity in this area, with emphasis on the use of gamification and adaptive learning to improve the effectiveness of security awareness training, in particular with focus to university students.

References:

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- 2) D. Huynh, P. Luong, H. Iida, R. Beuran, "Design and Evaluation of a Cybersecurity Awareness Training Game", IFIP International Conference on Entertainment Computing (ICEC 2017), Tsukuba City, Japan, September 18-21, 2017, pp. 183-188.