EMV& Biometric for Secure Online Purchases

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Abstract

This paper analyzes the demand for higher security protocols for purchases made online using a credit card. Current issues obscuring progress in credit card security include the lack of adoption of EMV chip technology world-wide, loop holes still existing in the EMV chip algorithms, sale of credentials over the black market, counterfeiting, and abuse by close family members. A new protocol is proposed whereby users are required to present their EMV chipped credit card at a virtual payment gateway or physical point of sale. Furthermore, in case the purchases come under the threat of a man-in-the-middle attack, a biometric scan of the user's fingerprint will also be mandatory to authenticate the credentials. Thus, hacks involving EMV vulnerabilities such as pre-play attacks and image capturing can also be eliminated. This protocol is revolutionary in that biometric security involving fingerprint matching in a biometric database using SDK in conjunction with EMV chip readers such as SecuGen and e-commerce websites programmed in Java have never been used simultaneously to process credit card purchases. Additionally, end-users' attitudes towards adopting the proposed solution indicate that for the sake of security, authentication using both a card reader and fingerprint scan is preferable over current practices.

Keywords
EMV Chip Readers, SDK for Fingerprint Biometrics, Online Purchases, Credit Card Security

Biography
Youness Ridani is the owner and founder of SEDCO Technologies in Skhirate, Morocco and a Computer Science Lecturer at SIST Casablanca, Associate College of Cardiff Metropolitan University, UK. He earned his Master of Science in Computer Security from the University of Liverpool, UK, in December 2017. At SIST, he currently teaches undergraduates courses in Digital Business and Computational Thinking. His research interests focus on protocols which enhance online payment security on e-commerce sites, and his business highly caters to e-business as well. He has created e-commerce sites for the MENA for over 17 years. His most recent project for the Moroccan market is covac.com which incorporates an e-grocery shopping website, mobile app, and delivery boy app integration to allow customers to purchase goods from local markets with delivery boy service. This will be his first publication and presentation of his research, and he hopes to implement his proposal into a pilot program for the region.