

# Secure Medical Image-Sharing Mechanism based on Visual Cryptography in EHR system

Dana Yang\*, Inshil Doh\*\*, KiJoon Chae\*

*Department of Computer Science and Engineering, Ewha Womans University, Seoul, Korea*

*Department of Cyber Security, Ewha Womans University, Seoul, Korea*

*yangzzzz@ewhain.net, isdoh1@ewha.ac.kr, kjchae@ewha.ac.kr*

**Abstract**— Securely sharing electronic health records (EHR) has attracted attention in medical environment. We discuss critical issues related to EHR-sharing and provide how to share a medical image of EHRs based on visual cryptography(VC) and secret sharing with password of practitioners for convenience in distributed system. Also, our proposal is applied to real system “openEMR” and evaluated in respect of performance and security

**Keyword**— secure data management, sharing medical image, visual cryptography, secret sharing



**Dana Yang** received the B.S. degree in the Department of computer software at Korean Bible University in 2013. She is currently a Ph.D. candidate in the Department of computer science and engineering at Ewha Womans University, Seoul, Korea. Her research interests include visual cryptography, authentication and D2D network security.



**Inshil Doh** received the B.S. and M.S. degrees in Computer Science at Ewha Womans University, Korea, in 1993 and 1995, respectively, and received the Ph.D. degree in Computer Science and Engineering from Ewha Womans University in 2007. From 1995 -1998, she worked in Samsung SDS of Korea to develop a marketing system. She was a research professor of Ewha Womans University in 2009-2010 and of Sungkyunkwan University in 2011. She is currently an assistant professor of Computer Science and Engineering at Ewha Womans University, Seoul, Korea. Her research interests include wireless network, sensor network security, and M2M network security.



**Prof. Chae** received the B.S. degree in mathematics from Yonsei University in 1982, an M.S. degree in computer science from Syracuse University in 1984, and a Ph.D. degree in electrical and computer engineering from North Carolina State University in 1990. He is currently a professor in Department of Computer Science and Engineering at Ewha Womans University, Seoul, Korea. His research interests include sensor network, smart grid, CDN, SDN and IoT, network protocol design and performance evaluation .