Topic: Recognition of Non Cooperative Individuals at a Distance Using 3-D Face Biometrics

Abstract: We present an approach to identify non-cooperative individuals at a distance from a sequence of images using 3D face models. Most biometric features (such as fingerprints, hand shape, iris or retinal scans) require cooperative subjects in close proximity to the biometric system. We process images acquired with an ultra-high resolution video camera, infer the location of the subjects’ head, use this information to crop the region of interest, build a 3D face model, and use this 3D model to perform biometric identification. To build the 3D model, we use an image sequence, as natural head and body motion provides enough viewpoint variation to perform stereo-motion for 3D face reconstruction. The evaluation results suggest a possibility that only video frame captured at a distance gives the 3D face shape of a person. Consequently, this allows the use of true shape invariants for recognition, and circumvents difficulties associated with pose and lighting.

Biography: Jongmoo Choi received the B.S. degree in physics, the MS. degree in cognitive science and the Ph.D. degree in electrical and computer engineering from Sungkyunkwan University, S. Korea. He was a research assistant professor at the Intelligent Systems Research Center (ISRC), Sungkyunkwan University. He is a post doctoral research fellow at the Institute for Robotics and Intelligent Systems, University of Southern California, USA. Dr. Choi’s current research interests include 3D face modeling, face recognition at a distance, multiple view geometry, statistical pattern recognition and machine learning.