Saudi Arabia Border Security Informatics: Challenges of a Harsh Environment

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Abstract : In this oral presentation, we will provide an overview of the technical and semantic architecture of a desert border security and critical infrastructure protection security system. Modern border security systems are designed to reduce the dependability and intrusion of human operators. To achieve this, different types of sensors are use along with video surveillance technologies. Application of these technologies in a harsh desert environment of Saudi Arabia poses unique challenges. Environmental and geographical factors including high temperatures, desert storms, temperature variations and remoteness adversely affect the reliability of surveillance systems. To successfully implement a reliable, effective system in a harsh desert environment, the following must be achieved: i) Selection of technology including sensors, video cameras, and communication infrastructure that suit desert environments. ii) Reduced power consumption and efficient usage of equipment to increase the battery life of the equipment. iii) A reliable and robust communication network with efficient usage of bandwidth. Also, to reduce the expert bottleneck, an ontology-based intelligent information systems needs to be developed. Domain knowledge unique and peculiar to Saudi Arabia needs to be formalized to develop an expert system that can detect abnormal activities and any intrusion.

Keywords : border security, sensors, abnormal activity detection, ontologies

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