Abstract

It is undeniable that security is becoming a major concern in almost every aspect of digital applications, like remotely controlling a robot, where any interference with the sent command, or received data is not accepted and could have negative impact on the robot’s mission.

In this research, robotic commands were secured using different techniques that vary between securing the transmission channels, and securing the data transmitted itself, while securing the encryption keys for the encrypted data. The transmission used Received Signal Strength Indicator (RSSI) modules signal for Radio Frequency (RF) modules (in the test case XBEE and NRF24L01+ modules were used) and ping time for internet modules (SIM808 and CC3000), choosing the strongest signal of each module and send data through them. While the data was encrypted using three encryption algorithms: RSA, AES and TwoFish. The test results from attempts to hack this system showed that it requires too much time (compared with using only one encryption technique) using a computer with high processing capacities and previous knowledge of the used security techniques.
References


Index Terms

Computer Science  Security

Keywords

Robot, Encryption, RSA, AES, TwoFish, RSSI, RF.