Security always has a very important place for people. Human beings had needed to communicate securely with each other. People produced the cryptography so that their messages could only reach the intended people so unauthorized people could not extract any information.

The signs in the inscriptions found in Egypt are considered the first example of cryptography. Roman Emperor Julius Caesar used an encryption method, which is known today as his name, in state communications.

Cryptography algorithms are divided into two main categories which are Classical Techniques and Modern Techniques. Classical Techniques can be calculated with simple operations.

Modern Techniques are divided into two main categories which are Symmetric Cryptography and Asymmetric Cryptography:

- In symmetric cryptography algorithms, a secret key is used for encryption and decryption. Key is sent to the receiver and the decryption process is performed.
- In asymmetric cryptography, public key and private key are used. Public keys is distributed to anyone. The private key is only available to the user to decrypt.

As a result of comparison, the RC4 algorithm actually has the very first position but the investigation of security condition, the AES algorithm is better a little. So, I decided to use AES algorithm in the project.

The block diagram includes camera configuration block, capture block, algorithms for encryption and decryption, and VGA driver block. I also used buffers in my design.

In this project, I used Nexys 4 development board with Artix-7 FPGA and OV7670 CMOS camera.

Application areas of cryptography is very wide. Used in a variety of fields in the real world, cryptography uses encryption to hide information in a coded language.

Some of these areas are: secure communications, end-to-end encryption, storing data, digital currency, military operations...

This project was completed within the context of ELE401-401 Graduation Project courses in Hacettepe University, Faculty of Engineering, Department of Electrical and Electronics Engineering.

I thank Dr. Barış Yüksekkaya for sharing his knowledge, experience, and time for this Project and for his invaluable contributions.