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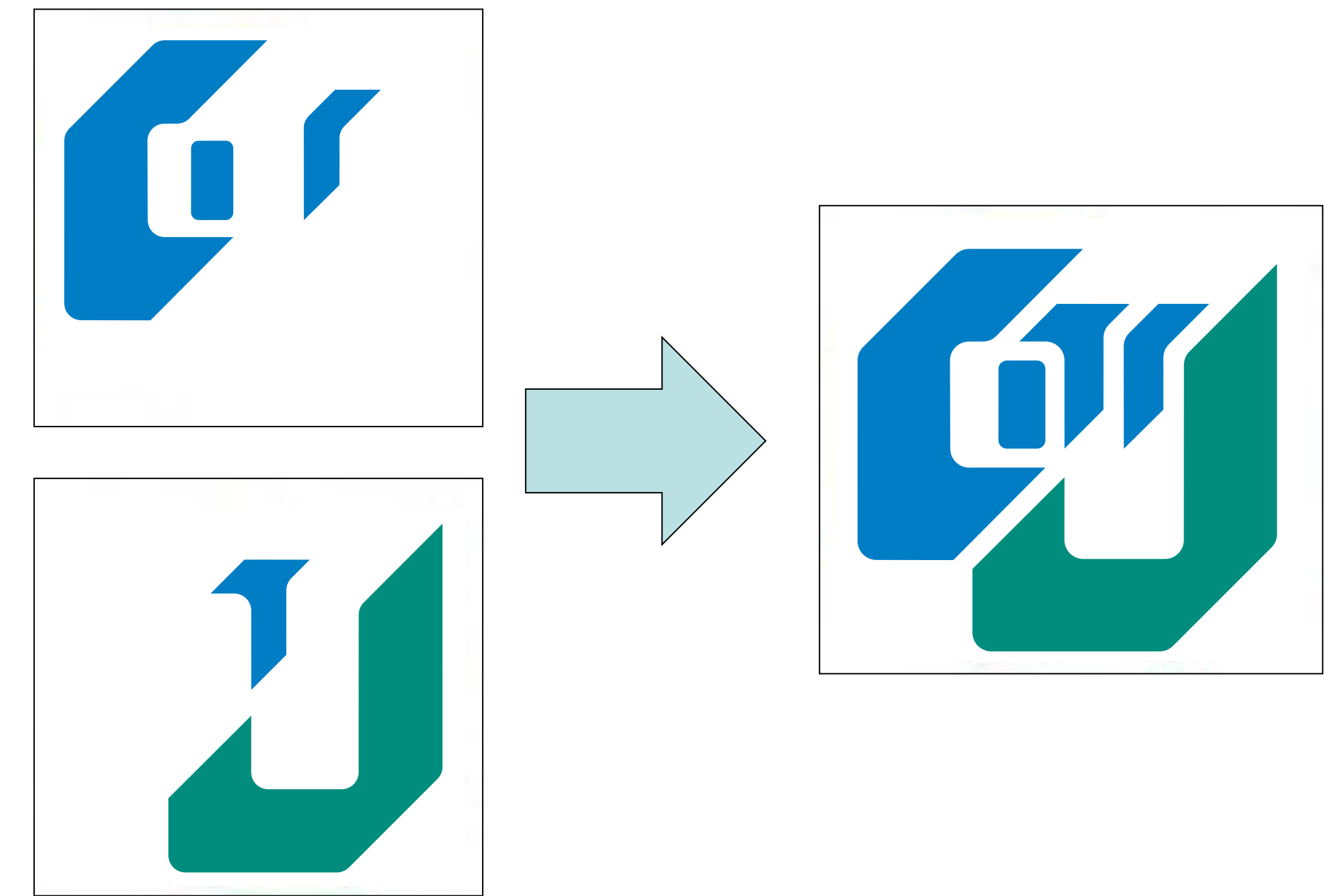
Programme: BEngECE

Supervisor: Dr. CHOW YT

Objective/Background

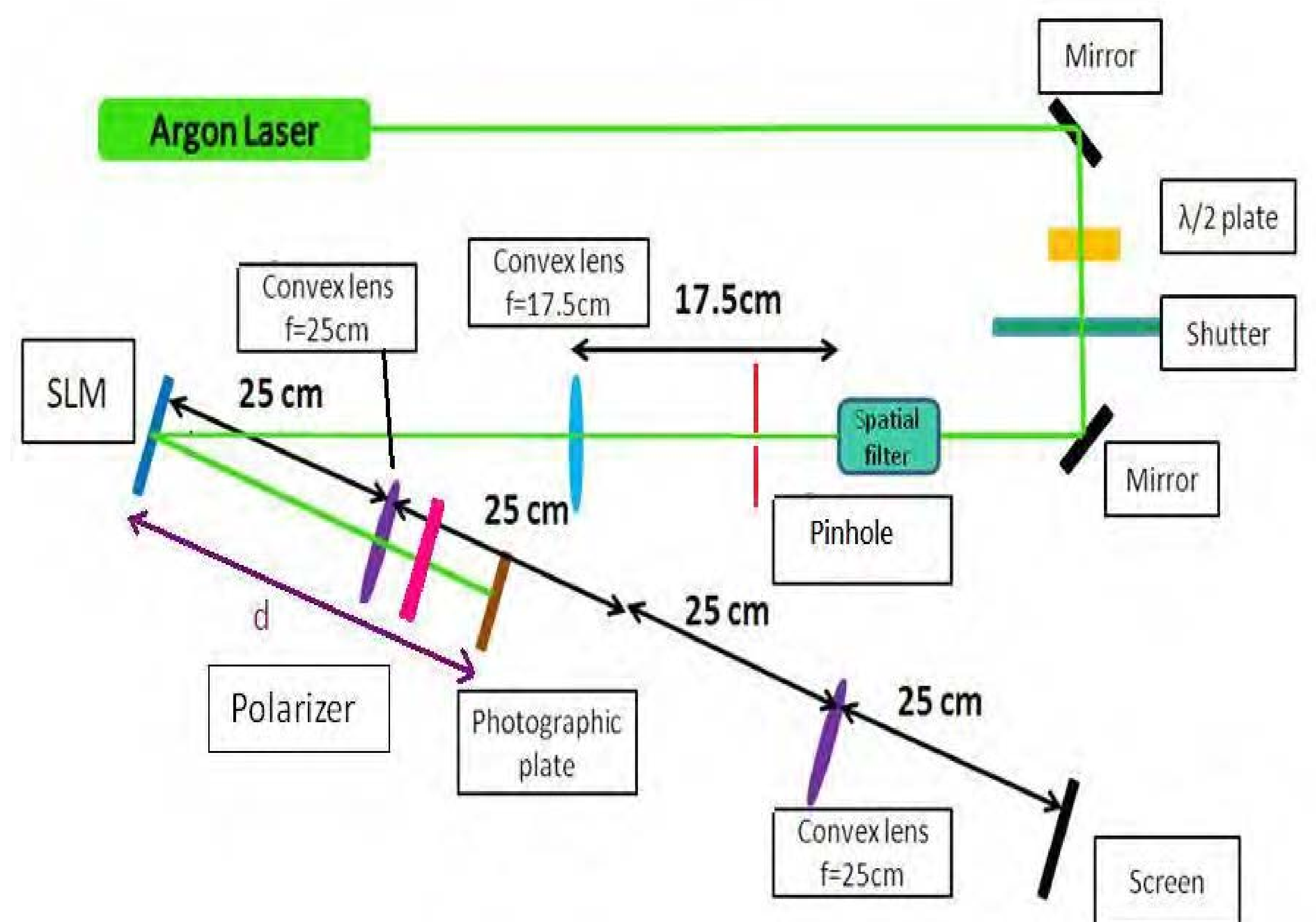
Holographic Data Storage was widely used in daily life such as the logo of the credit cards. In this project, the new encryption and decryption scheme was designed to improve the data security. The new idea was to separate the image into two part with two reference beam with different grating level. Reference beam was like a unique key for each stored image. Only the corresponding key can reconstruct the image.

Project Idea

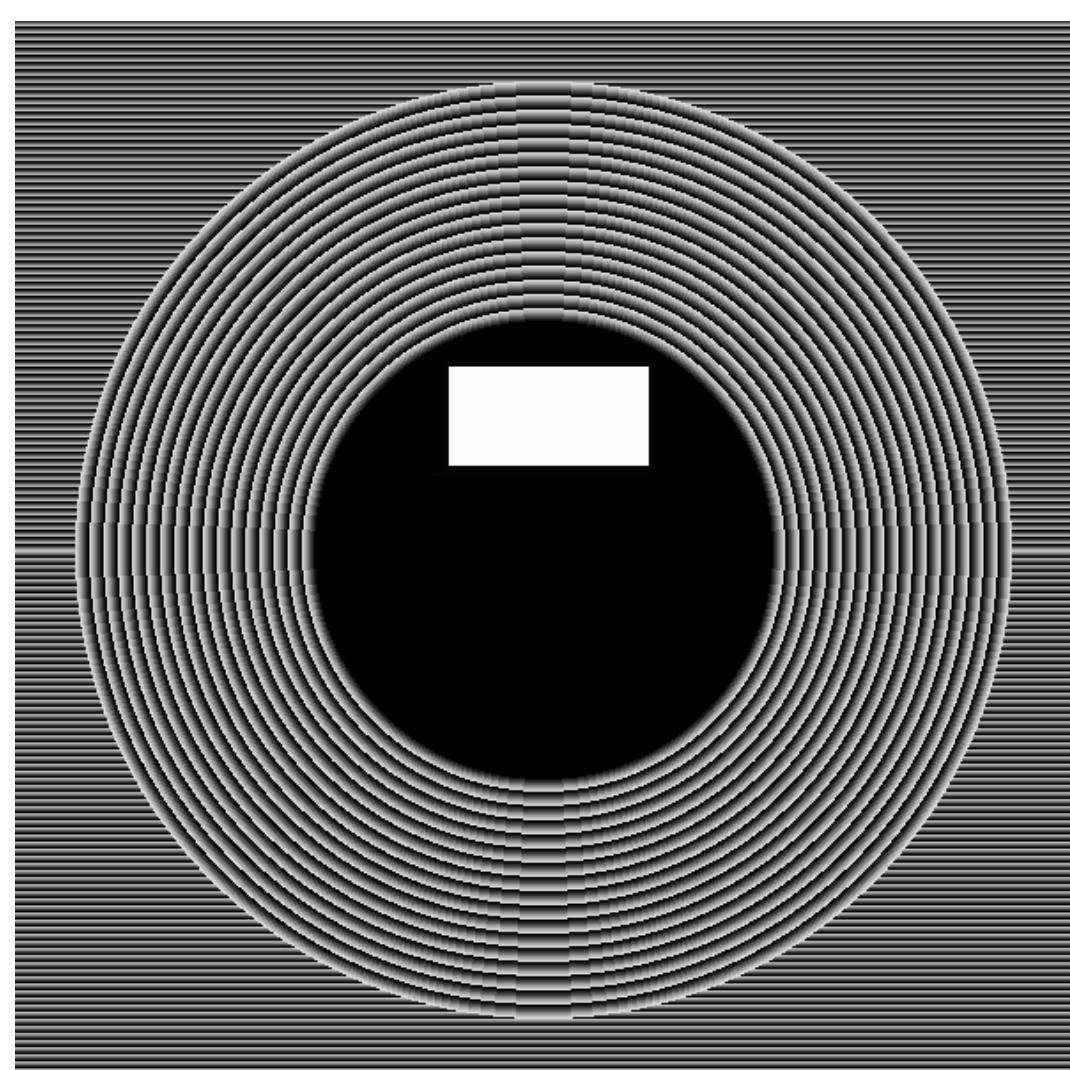


Methodology

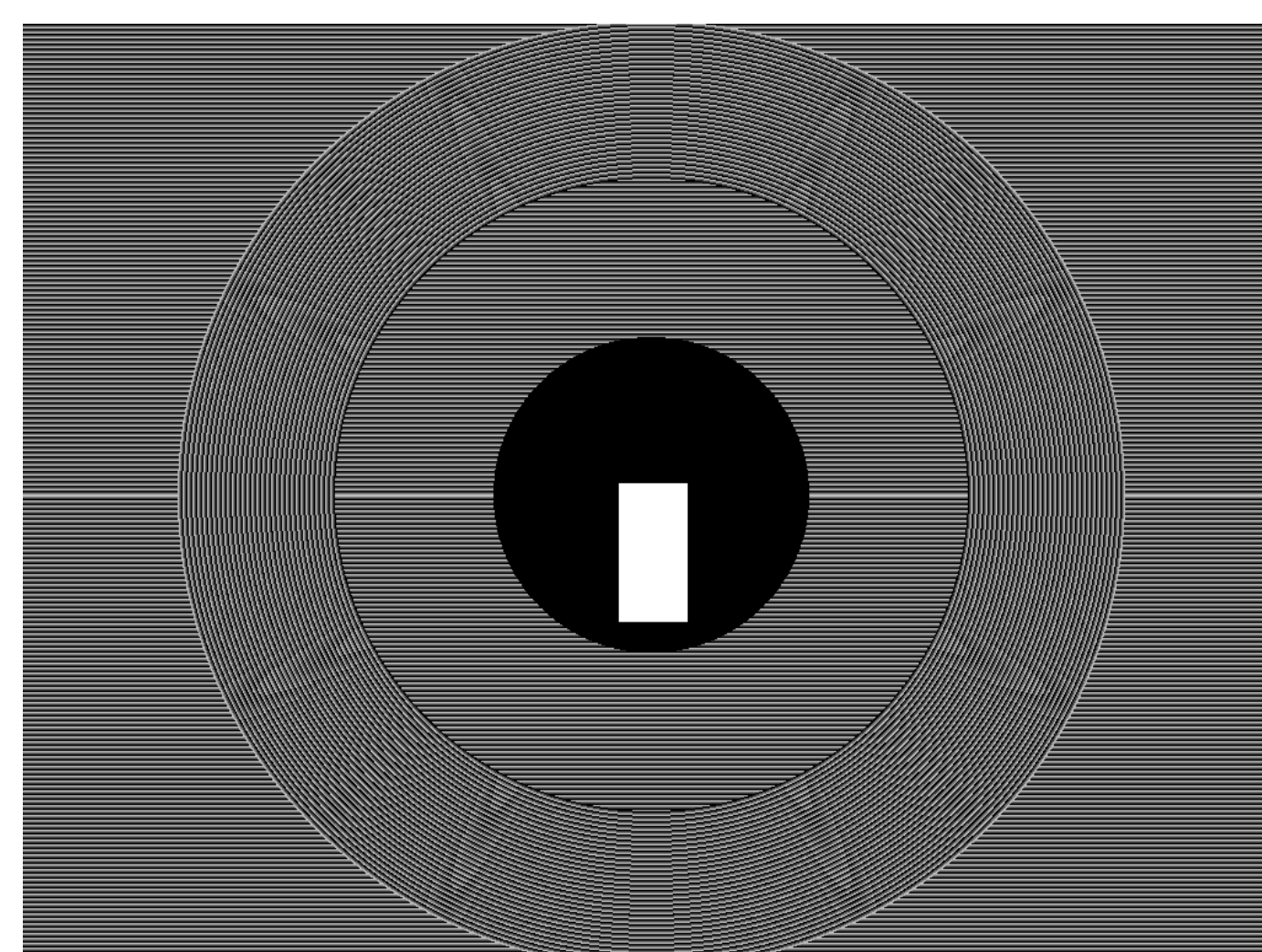
The project was separated into two: Fresnel Simulation and Experimental Holographic Storage System. To simplify the implementation of the idea, letter T was used and separated into upper and lower part with the reference beam in 8 and 4 grating level respectively in the encryption part of the double exposure. The combined 8 and 4 grating reference beam was used in the decryption.



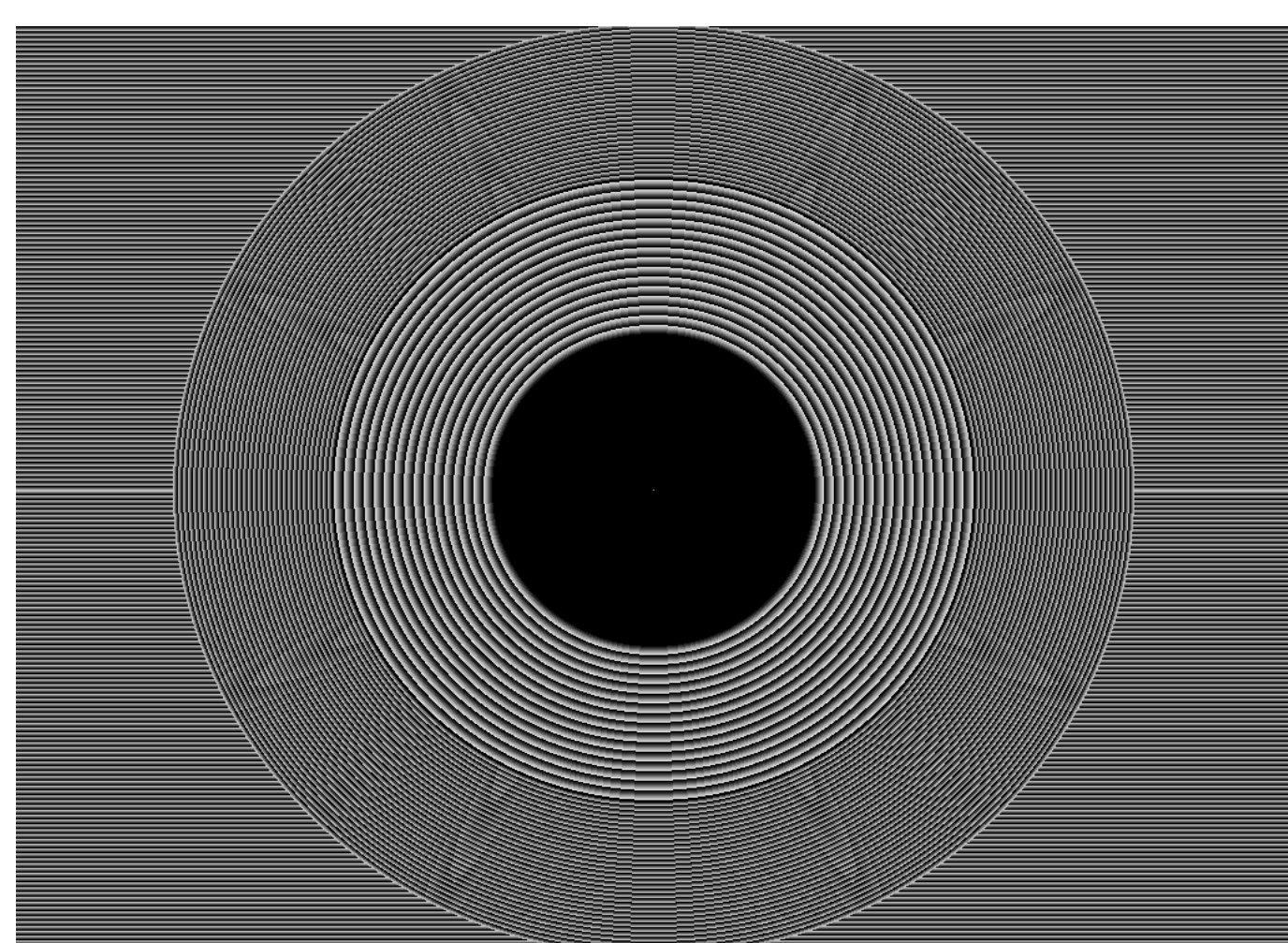
Reference Beam



8 grating level



4 grating level



8 and 4 grating level

Holographic Storage System

Results

Only the combined reference beam can get the entire image. However, the experimental result was not as good as the result from simulation. The reason was the power of laser for the encryption which was not high enough so that the quality of the reconstructed image was decreased.

Reference Beam	Simulation result	Experimental result
