

## ABSTRACT

The progress of information and communication technology (ICT) has ushered various aspects of life into a new era. Many things in the world are happening rapidly and in a modern way. The AI (Artificial Intelligence) Image Generator is an AI tool designed to produce high-quality and realistic images based on textual descriptions or prompts. In this final project, the Diffusion and Stochastic Gradient Descent with momentum (SGDM) method is used to generate images of numerical digits. Based on the experiments conducted, the model loss generated did not successfully converge, and the generated images bear no resemblance to typical digit numbers at all.

**Kata Kunci:** *Information and communication technology, Diffusion , AI Image Generator , Stochastic Gradient Descent with Momentum.*