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Abstract:In image recognition using deep learning in artificial intelligence, target learning images were collected by class and learning was performed. Deep learning is thought to be able to perform advanced object recognition by performing subsampling called convolution operations and pooling. However, accuracy after learning is not easily 100%, and a method to automatically improve accuracy for various issues was required. In this paper, we introduce a special function into the learning loop and improve the recognition accuracy by interfering with the convolution operation. We developed two types of special functions(A,B) and conducted experiments, including adjusting the control parameters of the neural network error backpropagation. When performing 4-8 class recognition for five types of objects (vehicles, animals, plants, buildings, parts), an average recognition accuracy improvement of 2.1% was obtained when one function A was used.(50words-350words)

Keywords: Image Processing, Deep Learning, Special Function, Control, Class, Category

1. INTRODUCTION

This document is provided for the instructions for ICAITD 2025 which is the second conference following from ICAITD 2024.

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others

Table 1. Accuracy and loss after training.

Input	Accuracy	Loss
Real images	0.95	0.12
Generated images	0.97	0.09
Mixed images	0.96	0.11

Table 2. Margin Specifications.

Margins	A4 Paper
Top	20 mm (0.79 in)
Bottom	20 mm (0.79 in)
Left	20 mm (0.79 in)
Right	20 mm (0.79 in)

3. Proposed Method

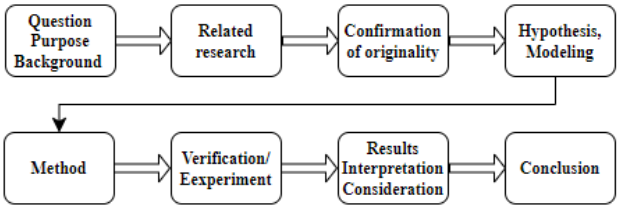

Fig.1. Blockdiagram of paper structure (png).

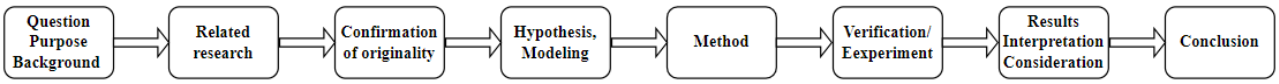

Fig.2. Blockdiagram of paper structure (long-sized).

4. Experiments

5. Interpretation and Considerations

6. Conclusions

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