

Introduction

In recent years, deep learning has been extensively used for arbitrary diagnosis of many mental diseases based on EEG or fMRI, including epilepsy¹, seizure prediction², Alzheimer’s disease³, etc. Simultaneously, depression is a common illness worldwide, with an estimated 3.8% of the population affected, including 5.0% among adults and 5.7% among adults older than 60 years. Over 700,000 people die due to suicide caused by the depression every year.⁴ However, it can be effectively diagnosed and treated in early period. A schematic comparison of synapses from a healthy subject and a depressed subject is presented in Fig. 1.

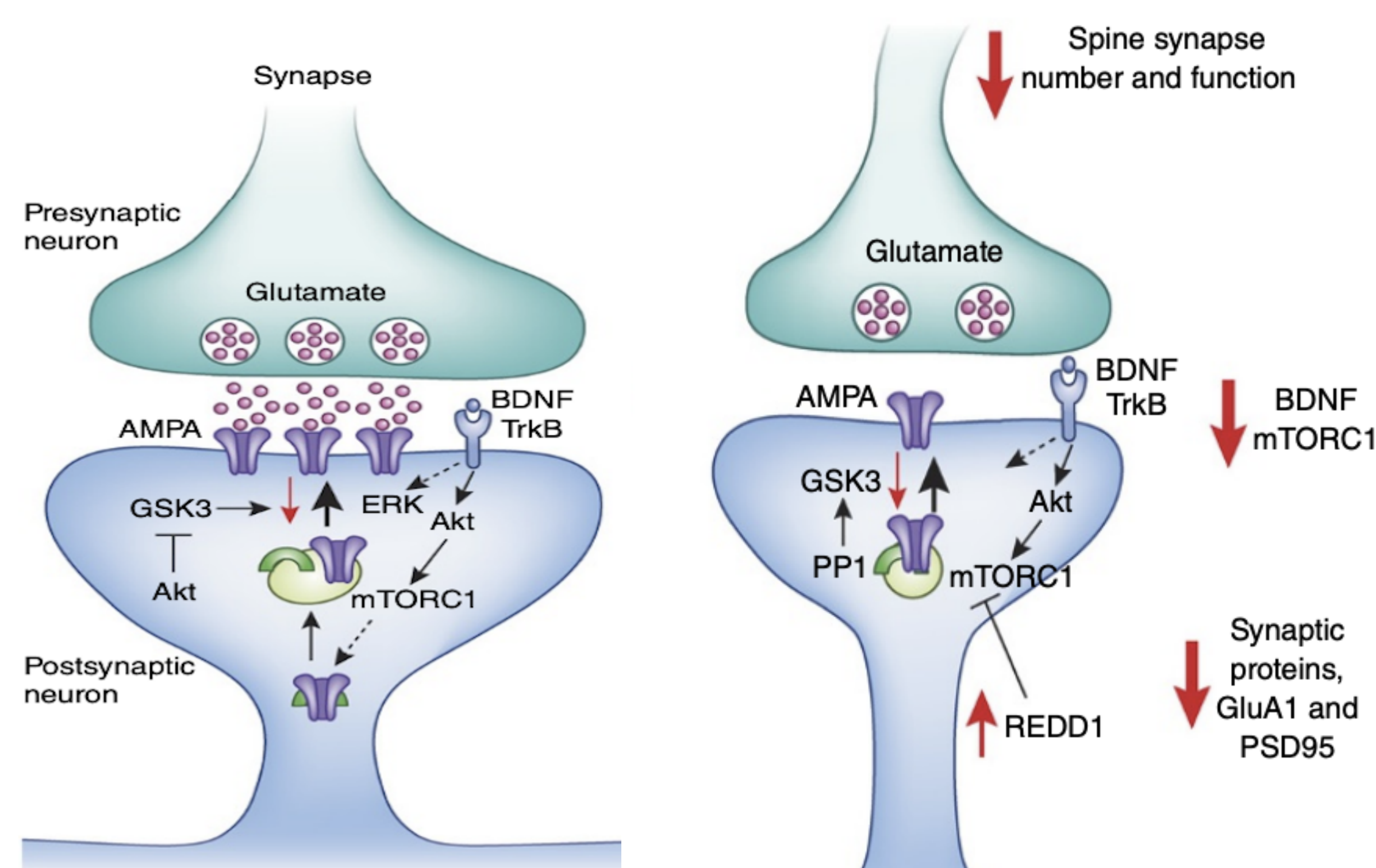


Figure 1: A schematic comparison of synapses of a healthy subject (left) and a depressed patient (right)⁵.

In this work, we presented an EEG-based major depress disorder detection neural network based on GPT-3. It takes EEG signal as input and outputs its predication graded with None, Mild, Moderate and Severe based on the severity of symptoms. We trained this network with 128 channels resting signal obtained 24 major depressive disorder subjects and 29 healthy control subjects, ranging from 16 - 52 years old⁶. This model was tested by various public datasets, the accuracy and f1 score can reach about 0.9. Additionally, we compared our model with other neural networks like CNN, RNN and ResNet-16, we can induct that our model performs better.

Data and Methods

Key information about the sources of data and methods employed in the study are highlighted below.

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Results

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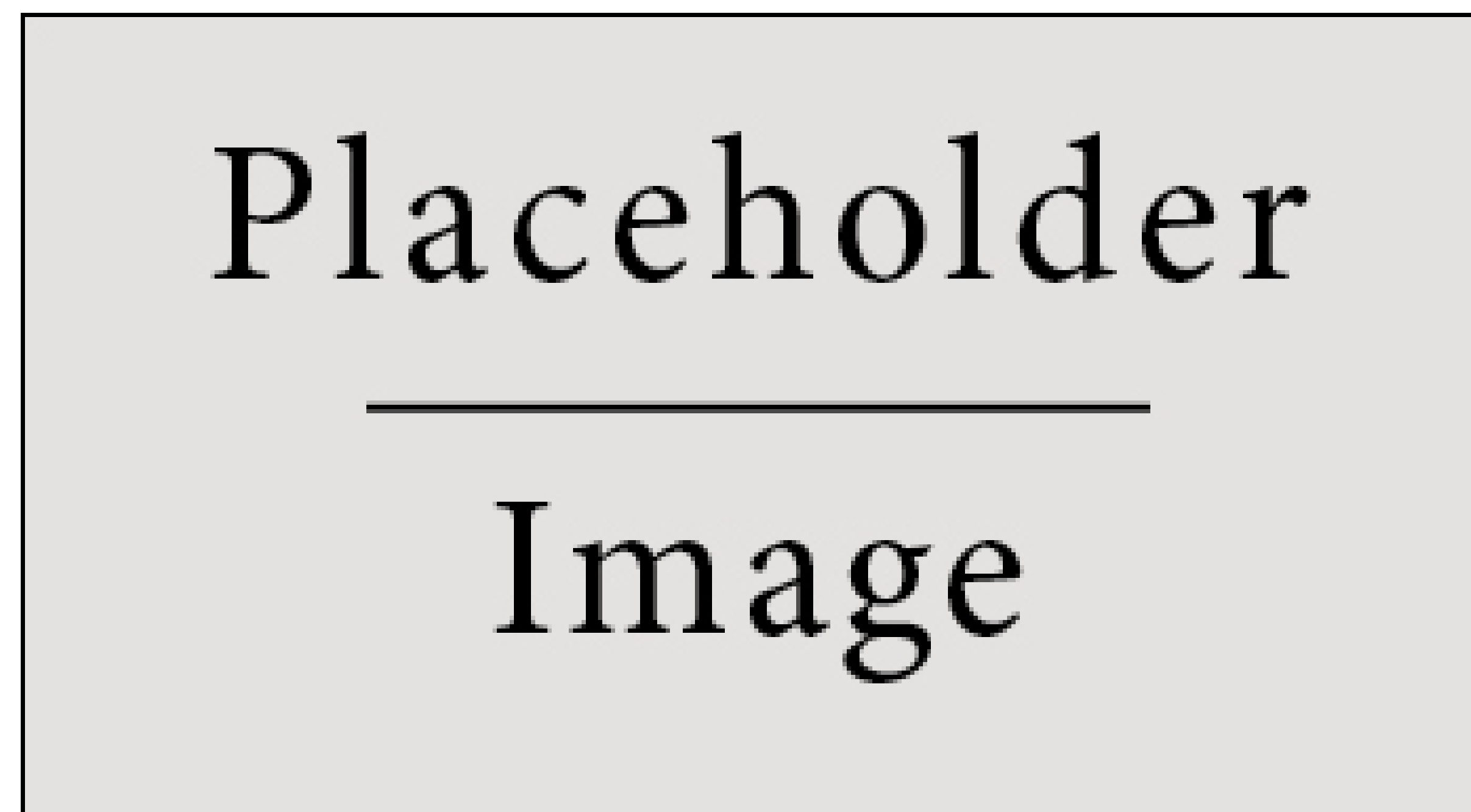


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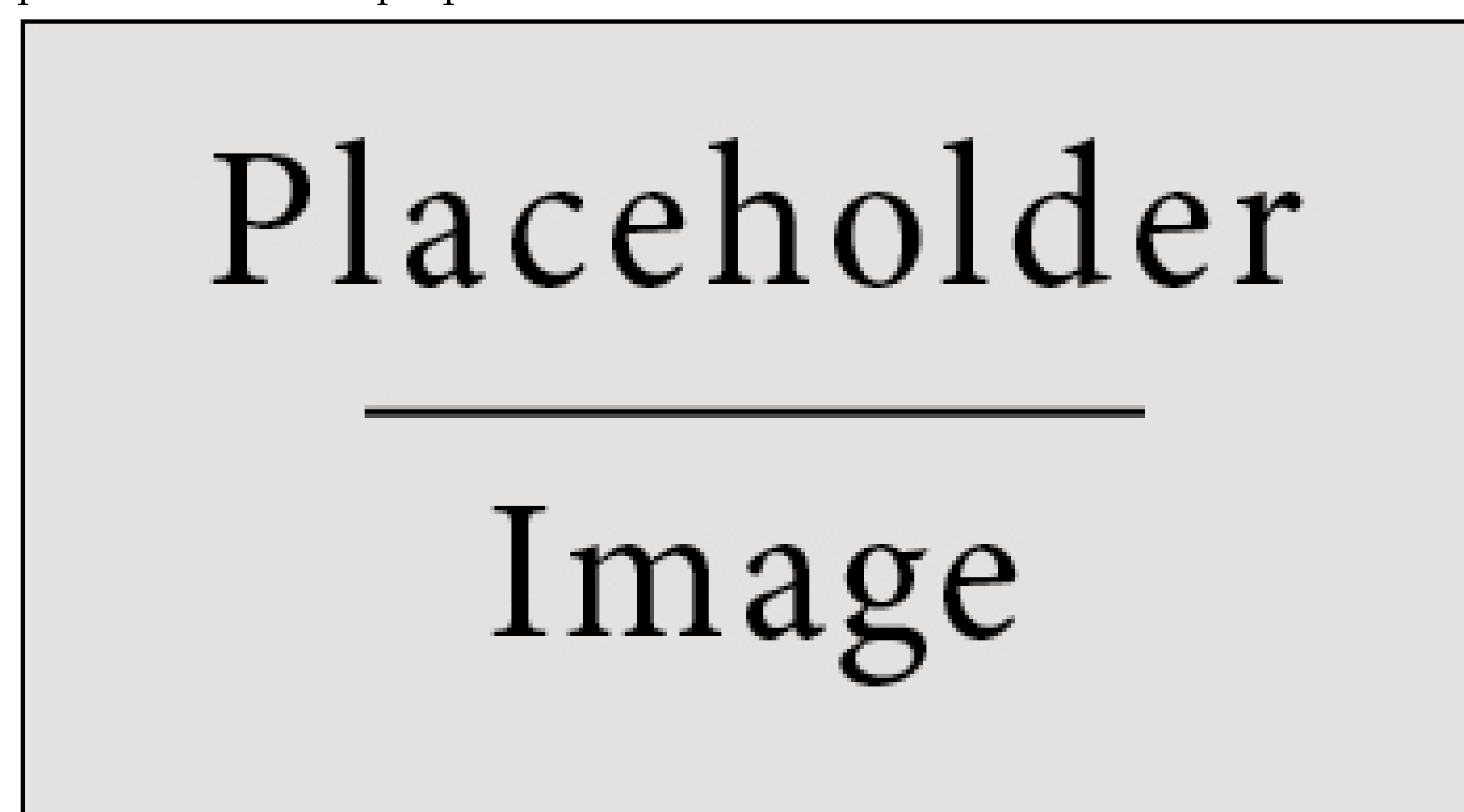


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Summary

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Acknowledgments

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