

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.

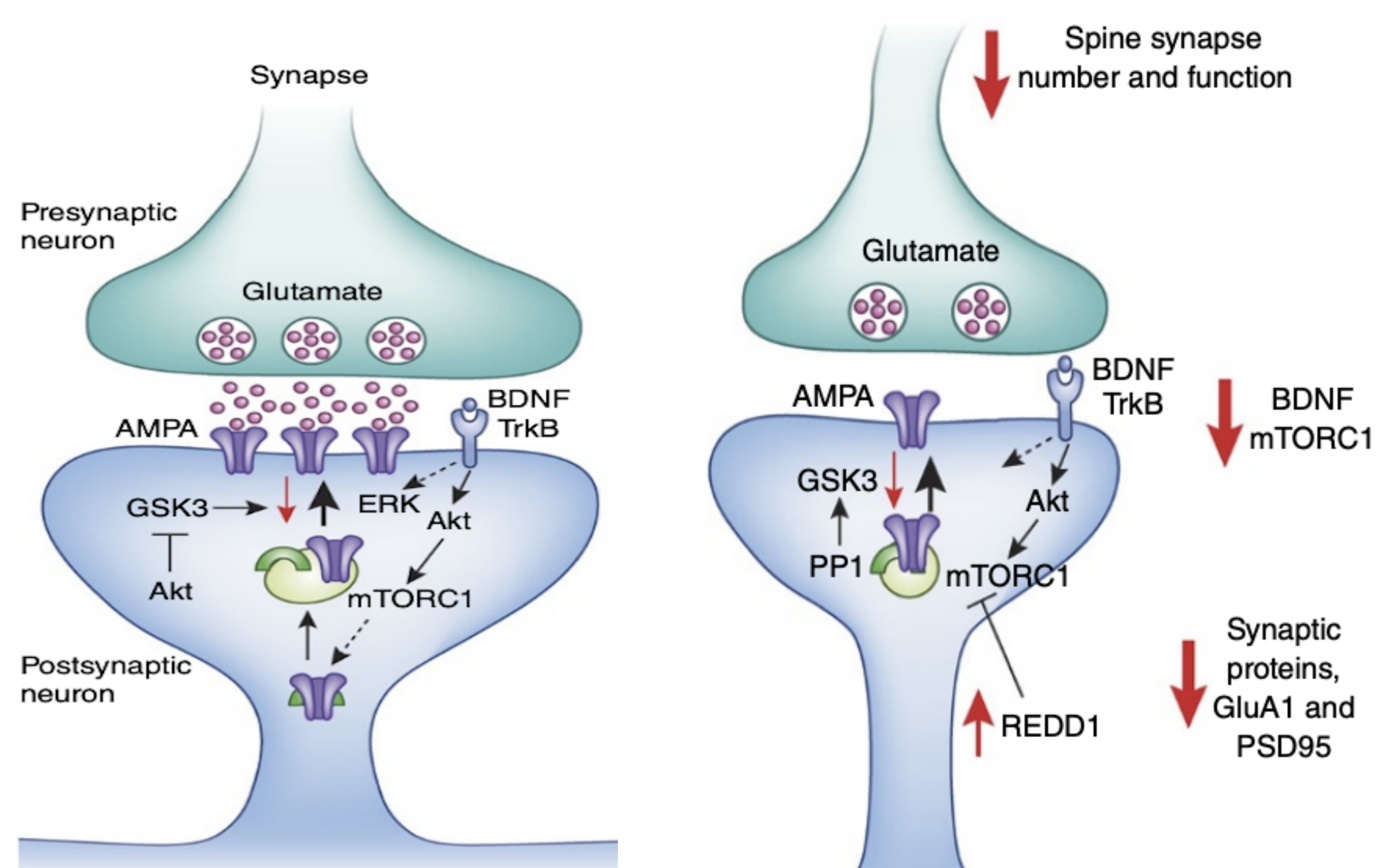


Figure 1: A schematic comparison of synapses of a healthy subject (left) and a depressed patient (right)⁵.

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 network with naive CNN and RNN, we can induct that our model performs better.

Data and Methods

The data being used in this work is an open-source EEG dataset from UAIS Lab, Lanzhou University, China⁶. The dataset contains traditional 128-electrodes EEG signals as well as audio data from clinically depressed patients and matching normal controls. The EEG signals of 53 subjects were recorded in resting state & under stimulation.



Figure 2: Loreteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

The pre-processing of the raw EEG signal contains 3 parts,

1. Segmenting
2. Band-pass filtering
3. Standardization

As illustrated in Fig.-2, Lorem ipsum dolor:

- o Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor. Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed 3 mm/ \sqrt{hour} . The.

Results

Fig-3 compares tLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.



Figure 3: Cdfhfghgf R (ghfgh) and GDDDE.

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum 705 valid (CT≠0) improvements in CT.

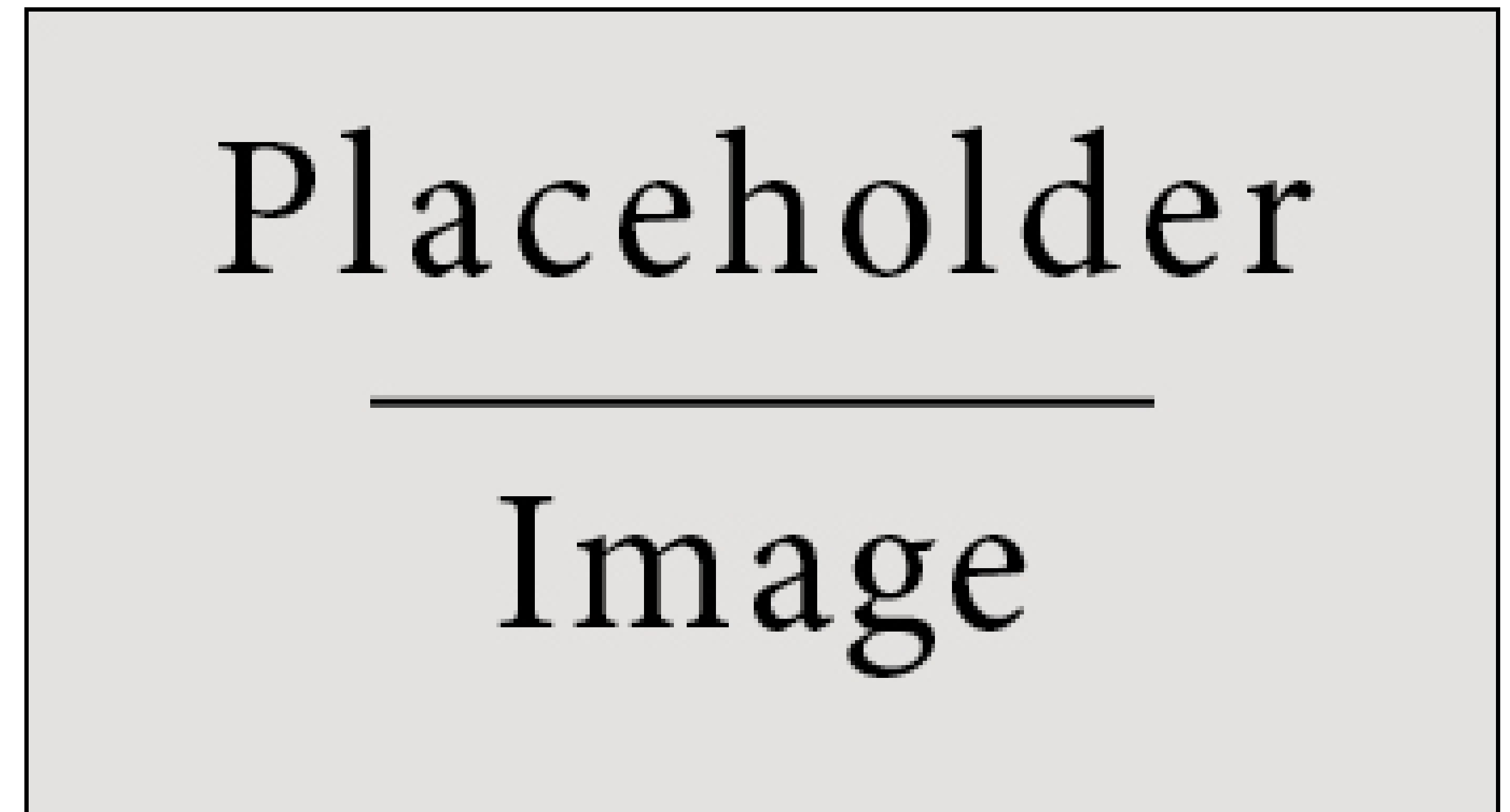


Figure 4: Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Fig. 4 illustrates Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum

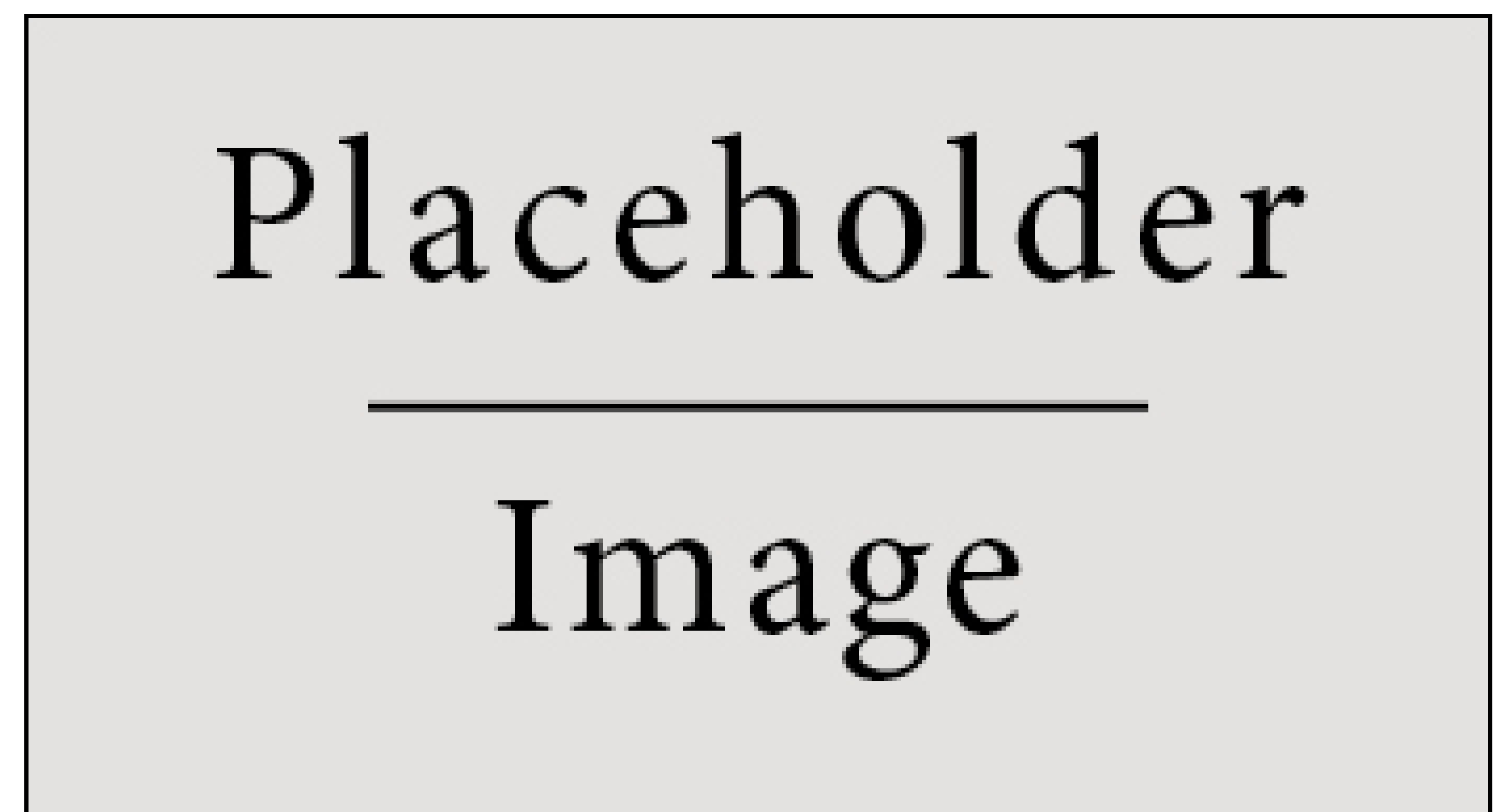


Figure 5: VLorem ipsum dolor sit amet, ulpa qui officia deserunt mollit anim id est laborumime.



Figure 6: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor.

Summary

Two types Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Uore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum. In summary, we wish to highlight the following:

- text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum;
- text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum,
- text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum;
- text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum;
- text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum;
- text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum;
- text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum.

text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum
 text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum
 text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum
 text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum
 text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum

text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum
 text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum
 text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum
 text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum
 text is derived from sections 1.10.33 of Cicero's De finibus bonorum et malorum

Acknowledgments

This research was undertaken text is derived from sections 1.10.33 of Cicero's *De finibus bonorum et malorum*text is derived from sections 1.10.33 of Cicero's *De finibus bonorum et malorum*text is derived from sections 1.10.33 of Cicero's *De finibus bonorum et malorum*