Use of Deep Spiking Neural Network for Object Recognition

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Abstract

Use of Deep Neural Network, commonly referred to as *deep learning* spiked in recent years and has been used as a tool for impressive advancements in the field of *Artificial Intelligence (AI)* Spiking Neural Networks draw inspiration from the Purpose of this project is to demonstrate the capabilities of a Spiking Neural Network and compare it to a more conventional Object Recognition Deep Neural Network

1 Introduction

1.1 Imbalanced Threshold

$$f(x) = \begin{cases} 1, & \text{if } V_{mem} \geq V_{th,pos}(V_{th}) \\ -1, & \text{if } V_{mem} \geq V_{th,neg}(-\dfrac{1}{\alpha}V_{th}) \\ 0, & \text{otherwise, no firing} \end{cases}$$