A Framework to Automatically Detect Fusion Events

Haohan Li

ABSTRACT
Quantitative analysis of vesicle-plasma membrane fusion events in the fluorescence microscopy, has been proven to be important in the vesicle exocytosis study. In this paper, we present a framework to automatically detect fusion events. First, an iterative searching algorithm is developed to extract image patch sequences containing potential events. Then, we propose an event image to integrate the critical image patches of a candidate event into a single-image joint representation as the input to Convolutional Neural Networks (CNNs). Finally, we validate the performance of our method on 9 challenging datasets that have been annotated by cell biologists, and our method achieves better performances when comparing with three state-of-the-arts.