My OVA classifier has a very small difference with the sklearn's implementation. My classifier gives an accuracy of 0.3882, while the sklearn's has an accuracy of 0.3713, which the difference is within 0.02. This might because that in my OVA classifier, I use 'sag' as the solver for logistic regression, which gives a much faster convergence rate on a large dataset than 'lbfgs' used by sklearn's implementation and might has a higher accuracy .