**Testing decoding accuracy against chance can be problematic, especially testing for random rather than fixed effects (see Allefeld, C., Görgen, K., & Haynes, J.-D. (2016). Valid population inference for information-based imaging: From the second-level t-test to prevalence inference. *NeuroImage*, *141*, 378–392.** [**http://doi.org/10.1016/j.neuroimage.2016.07.040**](http://doi.org/10.1016/j.neuroimage.2016.07.040)**)**

**When testing classification accuracies within two conditions against each other, this should not be a problem. Also, when training on a different task than one tests on, this should not be a problem. But when doing a k-fold train-testing and only evaluating accuracy against chance, the interpretation is basically that of a fixed effect, rather than a random effect. This will be addressed in later versions of the scripts.**

**Some other problems that can easily creep in are guarded for in the scripts:**

1. **Balanced designs are enforced by the analysis algorithms, such that any instance of a stimulus class that comes from a particular condition, will appear equally often as all other conditions that go into a stimulus class. For example, if a target position can either contain a letter or a digit, an equal number of letters and digits will go into the stimulus class for each target position.**
2. **Accuracy is always computed as the average number of correct classifications *per stimulus class*. So if the classifier is asked to discriminate between left- and right-targets, left-right accuracy is computed as the average of classification accuracy for right targets on the one hand, and classification accuracy for left targets on the other. This way, classifier bias for either left or right targets (if any) cannot influence overall classification accuracy.**