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12:00–1:00p, Biotech Center Auditorium

Rapid Acceleration of the Permutation Test via Slow Random Walks in the Permutation Group

Abstract: The permutation test is an often used test procedure in brain imaging. Unfortunately, generating every possible permutation for large-scale brain image datasets such as HCP and ADNI with thousands images is not practical. Many previous attempts at speeding up the permutation test rely on various approximation strategies such as estimating the tail distribution with known parametric distributions. In this study, we show how to rapidly accelerate the permutation test without any type of approximate strategies by exploiting the underlying topological structure of the permutation group via random walks. The method is applied to large number of magnetic resonance images in two applications: (1) localizing the male and female differences and (2) localizing the regions of high genetic heritability in the sulcal and gyral graph patterns of the human cortical brain. The talk is based on <http://arxiv.org/abs/1812.06696>.



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