

sift - analyse page]]. more detail on the mathematics behind pca can be found on our page: [\[\[sift:principal_component_analysis:the_math_of_principal_component_analysis_\(pca\)|the math of principal component analysis \(pca\)\]\]](#). this page includes: * visualizing the [\[\[sift:application:analyse_page#variance_explained|variance explained by each pc individually\]\]](#); * visualizing the [\[\[sift:application:analyse_page#loading_vector|variance explained by each pc at each point in the signal's cycle\]\]](#); * [\[\[sift:application:analyse_page#workspace_scores|scatter-plotting workspace scores\]\]](#) in pc-space; * showing the [\[\[sift:application:analyse_page#group_scores|distribution of scores by group\]\]](#) for each pc; * visualizing the [\[\[sift:application:analyse_page#extreme_plot|mean and extreme values\]\]](#) that result from reconstructing the underlying data with each pc; and * visualizing how the signals can be [\[\[sift:application:analyse_page#pc_reconstruction|reconstructed from the computed pcs\]\]](#). ===== further analysis ===== sift has several built in modules to take you further with you pca analysis, including: * [\[\[sift:principal_component_analysis:t-squared_and_q-test_dialog|t-squared tests:\]\]](#) finding outliers using a multi variate t-squared distribution. * [\[\[sift:principal_component_analysis:t-squared_and_q-test_dialog|q-tests:\]\]](#) finding outliers on small datasets using a q-test. * [\[\[sift:principal_component_analysis:mahalanobis_distance_and_spe_dialog|mahalanobis distances:\]\]](#) finding outliers through their mahalanobis distances. * [\[\[sift:principal_component_analysis:local_outlier_factor_dialog|local outlier factors:\]\]](#) finding outliers through the local outlier factor. * [\[\[sift:principal_component_analysis:k-means_dialog|k-means analysis:\]\]](#) clustering pca results through k-means clustering. ===== tutorials ===== for a step-by-step example of how to use sift to perform pca on your data, see the [\[\[sift:tutorials:perform_principal_component_analysis|pca tutorial\]\]](#). for a step-by-step example of how to use sift to perform further statistical testing on pca results, see the [\[\[sift:tutorials:run_k-means|tutorial: run k-means\]\]](#). for a step-by-step example of processing and analyzing large data sets in sift and using pca to distinguish between groups, see the [\[\[sift:tutorials:treadmill_walking_in_healthy_individuals|tutorial: treadmill walking in healthy individuals\]\]](#) and the [\[\[sift:tutorials:openbiomechanics_project:analysis_of_baseball_hitters_at_different_levels_of_competiti|tutorial: analysis of baseball hitters\]\]](#).

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